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Original Articles

DIFFERENTIAL DIAGNOSIS BETWEEN FUNCTIONAL AND ORGANIC CARDIAC MURMURS.*

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About a month ago a business man in a neighboring city wished to protect his associates by taking out a fifty thousand dollar life insurance policy. He was rejected because the examining physician reported that he had a heart murmur. He applied to another company and was again rejected for the same reason. He then went East to the home office of another company and was rejected for a third time. He then came to Grand Rapids where I examined him for a fourth company and found him to have a functional instead of an organic heart murmur. I therefore recommended his acceptance. Wishing to have the applicant passed upon by two examiners on account of the size of the policy, the company sent him to Chicago where my finding was confirmed. The policy was accordingly issued.

This gentleman's experience is an illustration of what is happening many times a day although the outcome in this particular case was rather an unusual one as most life insurance companies regularly reject all applicants with heart murmurs.

Three years ago I sent a questionaire to the medical directors of a number of old line companies and received replies from twenty. Half of these said they accepted applicants with heart murmurs, "if functional," and then proceeded to state that owing to the difficulty of making a differential diagnosis between functional and organic murmurs such cases were regularly rejected.

One director said, "I assume that a functional murmur is nearly as rare as a Jew in an Irish graveyard. I do not believe it is possible to differentiate between a functional and an organic heart murmur. Functional murmurs do not exist in life insurance."

Another stated that "the only sure differentiation is made by the subsequent history of the individual. If the murmur disappears permanently then the presumption is that it was a functional murmur. As long as the applicant shows a murmur of any kind we do not consider it's safe to accept him."

Another director wrote. "I believe that from a clinical standpoint it is possible by physical examination to differentiate between a functional and an organic murmur, but for practical life insurance work it is not always wise to do this."

Many a man has left his family penniless, many a promising business career has been sidetracked, many brilliant boys and girls on graduating from high school with high honors have been unable to take advantage of a scholarship that would enable them to go through college, many a young woman has been advised never to marry for fear of being unable to stand the strain of childbirth, many men and women have become confirmed neurasthenics and lived in constant fear of sudden death, many young men anxious to serve their country in one or another branch of the army or navy at a time when they are so much needed have been prevented from doing so and many more will be—all because so many members of the medical profession still cling to the errors and traditions of the past and do not yet appreciate the fact that the great majority of heart murmurs are physiological and normal signs and do not indicate past or present disease of the heart of any kind.

A few years ago in writing to one of my friends in Philadelphia, a most distinguished clinician, I stated that I thought a little exercise or the assumption of one position or another would produce a murmur in the hearts of over half of the people who came to my

*Read before the American Climatological and Clinical Association at Lakewood, New Jersey, May 30, 1917.

office and that I thought most of such hearts were perfectly normal. He replied that he considered any heart pathologic that presented a murmur under any circumstance. Yet it is necessary to exercise great care in estimating the condition of some of these hearts as was illustrated by a case which has been under my observation the past two years. A man 59 years of age came to me complaining of occasional attacks of slight pain in his stomach which seemed to come on after exercise and to have no relation to his meals. He also admitted being a little short of breath on walking up a hill. He looked well and was very active for a man of his age. His palpable arteries were not hard. He had a soft systolic murmur at the apex. The heart seemed a little enlarged and the second pulmonic sound slightly accentuated. The systolic and diastolic blood pressures were within normal limits, but during the taking of them there was noticed some inequality in the strength of the heart beats or unequal force of the systoles of the left ventricle, although there was no arrhythmia and no inequality of the pulse at the wrist. The diagnosis of myocardial degeneration and the serious prognosis were laughed at by the patient and ridiculed by three or four doctors who saw him later. He made no change in his activities and dropped dead when about to enter his automobile three days before I left home.

Of course there may be times when a prompt and certain diagnosis between functional and organic murmurs cannot be made, but the writer believes that a careful and comprehensive examination will lead to a correct estimate of the condition in the great majority of cases.

All authorities agree that *functional* murmurs are usually *systolic*. Cabot states that the majority of murmurs heard over the heart are unassociated with valvular disease and that 99 per cent. of functional murmurs are systolic, the exception being the very rare diastolic functional murmur which may occur in severe anemia when the hemoglobin is 25 per cent. or less, probably due to stretching of the aortic ring or to sounds produced in the veins of the neck and transmitted to the vena cava.

The first thing to do when confronted with a murmur is to decide whether it is systolic or diastolic. If diastolic, which also includes pre-systolic, the lesion may at once be concluded to be an organic one.

Functional murmurs include anemic, cardiomuscular, cardiorespiratory, accidental and physiological murmurs. They may be heard in any situation over the heart, but are most frequent in the pulmonary and mitral areas. The vast majority are best heard over the pulmonary area in the second left interspace.

Osler mentions five classes of systolic murmurs in the pulmonary area in which no lesion of the pulmonary valves exists. They are not associated with any evidence of enlargement of the heart nor with accentuation of the pulmonic second sound. The same may be said of all functional murmurs whatever their origin.

Whenever a systolic murmur is heard over the apex, the tendency is to conclude that a mitral insufficiency is present, but Osler states that "a murmur systolic in character, and of maximum intensity at the apex, and propagated even to the axilla, does not necessarily indicate incompetency of the mitral valve. There is heard in this region a large group of what are termed accidental murmurs, the precise nature of which is still doubtful. They are probably formed in the ventricle and are not associated with hypertrophy or accentuation of the pulmonary second sound."

Functional murmurs may be soft or harsh, loud or weak, long or short, and they may be present over any part of the cardiac area. They are usually not loud and are poorly conducted, but some of the loudest and most widely conducted murmurs I have heard were functional. They may vary with the position of the patient and the phase of respiration. In some cases they are present in the upright position and disappear when lying down, in others the murmur appears only when lying down and disappears when standing up or on slight exertion. Cardiorespiratory murmurs are often loudest at the apex, but may be heard as high as the second rib in front, in the axilla, and below the angle of the scapula but as a rule the area over which they are heard is very limited. They are usually louder at the end of deep inspiration and frequently disappear altogether on deep expiration. In still other cases they are persistent under all circumstances.

Organic systolic murmurs occur in mitral and tri-cuspid regurgitation, aortic and pulmonary stenosis. In mitral regurgitation the heart is regularly enlarged, particularly in the transverse diameter, due to hypertrophy of the right and left ventricles. The apex impulse is diffuse and heaving and is displaced to the left and downward, the second pulmonic sound is accentuated. Over the apex is to be heard a systolic murmur which is conducted to the left

and heard in the axilla and below the angle of the scapula. Without these three characteristics, murmur at the apex, enlargement of the heart and accentuation of the pulmonary second sound, a diagnosis of mitral regurgitation is not justified.

In tri-cuspid regurgitation, particularly if large, the right auricle is always dilated. This may be even unaccompanied by a murmur.

Aortic stenosis without regurgitation is extremely rare. Several clinicians of wide experience have told me they have never seen a case. When present it gives rise to a marked hypertrophy of the left ventricle. An aortic systolic murmur is not uncommon, however, in later life as a result of some stiffening or roughening of the cups, unaccompanied by narrowing of the orifice, and the left ventricle is more or less hypertrophied.

Pulmonary stenosis leads to enlargement of the right ventricle, but organic disease of the pulmonary valve is very rare except in congenital heart disease when the disturbance of the circulation is usually considerable and clubbing of the finger tips, cyanosis and other congenital defects often co-exist. The right heart too is generally enlarged.

One of the most important and constant findings in cases of organic murmur is enlargement of the heart. This seems to be more regularly the case with lesions producing systolic murmurs than with those giving rise to diastolic murmurs. But it cannot with accuracy be said that valvular lesions *always* lead to hypertrophy. "It is possible to have a valvular lesion at the aortic or mitral orifice without compensatory hypertrophy, but this is rare." (Councilman. Private Communication.)

Warthin states that "It is however very unusual for a valvular lesion of long standing and aortic or mitral orifice to exist without more or less compensatory hypertrophy. Were it not for the compensatory hypertrophy of the heart walls which usually occurs in these cases, they would seldom terminate in recovery." (Private Communication.)

Practically all authorities agree that pathologic lesions causing organic systolic murmurs regularly lead to enlargement of the chambers or the walls of the heart or both. The exceptions to this rule are so rare as to be almost negligible in practice. Inasmuch therefore as the differential diagnosis between functional and organic murmurs seems to depend so largely upon the recognition of cardiac hypertrophy, let us consider for a few moments what the clinical signs and symptoms of enlargement of the heart are.

Displacement of the apex beat downward and to the left is an important sign. In healthy adults the apex impulse is usually felt in the fifth interspace immediately inside the nipple, seven to ten cms. from the median line. It may be in the fourth interspace and outside the nipple line in children and some adults. (McKenzie.)

The extent of the impulse varies, ordinarily it covers an area of about two cm. square. Broadening of the impulse is suggestive of dilatation, or hypertrophy and dilatation combined, but a diagnosis of hypertrophy cannot be made from an increase in the area of pulsation alone, as this may be due to extrinsic causes. Nor should a diagnosis be made from displacement of the apex beat alone as this may be due to other causes such as adherent pleura, fibroid tuberculosis, pleural effusions or pneumothorax.

The *only pathognomonic sign* of hypertrophy of the left ventricle as far as the apex is concerned is *increased force* of the apex beat. A large diffuse beat with a forcible, thrusting, heaving impulse and extension of the area of cardiac dullness to the left are characteristic of hypertrophy and dilatation of the left ventricle. The area of visible pulsation is also increased. In nervous people the heart often beats rapidly and with an appearance of increased force, but on putting the hand over the heart it will be found that the beat is light and weak.

In case the apex beat cannot be located with the patient on the back, it is well to look for it with the patient on the left side. In some cases the presence of an apex beat in the sixth interspace can be recognized only with the patient in this position and it may be valuable evidence of enlargement of the heart.

It is usually more difficult to determine enlargement of the right heart than of the left by percussion because the right border is covered more completely by the lung and sternum. Kovacs teaches that when dullness extends one finger's breadth to the right of the sternum, it means dilation of the right ventricle. A heart may be enlarged by hypertrophy of its walls as well as by dilatation of its cavities. We cannot percuss accurately enough to appreciate one to two cms. increase in the size of the heart which is the usually limit of enlargement in hypertrophy alone. Nor do we in postmortems find a greater degree of hypertrophy than this unless it is accompanied by dilatation. (Cabot). Any enlargement of the heart, therefore, which can

be demonstrated by percussion must be due in part to dilatation of its cavities whether there be co-existing increase in the thickness of its walls or not. In the great majority of cases of hypertrophy, from whatever cause, both sides of the heart are affected.

The most common symptoms of organic cardiac disease are undue breathlessness or fatigue or a sense of tightness across the chest on or after exertion, palpitation and precordial distress or pain. The distress may be referred to the epigastrium and such patients may attribute their trouble to the stomach rather than to the heart. Some patients, however, who deny shortness of breath on further questioning will admit their inability to walk rapidly or stand unusual exertion with as much freedom from distressing symptoms as formerly. A tendency towards breathlessness on ascending a flight of stairs or walking up a hill are most important symptoms, but are also common to many affections besides heart disease. Slight pain in the precordium is also a frequent symptom of myocardial weakening but often occurs in functional heart affections and is frequently absent in organic disease. The most characteristic feature of pain due to heart disease is that it is brought on by exertion though it may not appear until some hours later. A little swelling around the shoe tops at night or some swelling of the feet is a not uncommon symptom.

Green has called attention to the astonishing variations in discomfort, pain and hyperesthesia which may result from cardiac disease. Conditions quite remote from the heart itself and attributable to secondary congestions of distant organs such as pain in the lower axilla and shoulders, in the chest wall, in the epigastrium, in the inner aspect of the upper arm and the ulnar surface of the forearm, wrists and fingers may be due to weakening of the myocardium. Many of the above symptoms may pass unnoticed until recalled by questions.

In order to determine whether enlargement of the heart could be eliminated by careful physical examination in cases of heart murmur which I considered to be functional in origin, Dr. Henry Hulst has examined twenty-five men for me in the past two years with the X-ray. Each one had a systolic murmur over the heart and had been rejected by life insurance companies on account of it from one to four times. They were selected from a considerable number of cases of heart murmur coming under observation during this period. Usually it is a simple matter to make the differentiation between functional and organic murmurs. As most cases of advanced tuberculosis are readily recognized, so are most cases of organic heart murmur, but it is sometimes as difficult to exclude organic disease in a heart as incipient tuberculosis in a lung and only debatable cases were sent to Dr. Hulst.

The following will serve as illustrations:

Mr. E. J. H. Thirty-nine years old. Never been seriously ill. Height 5 feet, 11¾ inches. Weight 150 pounds. Blood pressure 131-80. Force of cardiac impulse normal. Dullness at least one inch within the nipple line. P.m.i. under the fifth rib, 7 cms. from the median line. At the aortic area a soft systolic murmur, taking the place of the first sound. Second sound normal: Pulmonary area same as at aortic: Second pulmonic sound not accentuated: Over the apex a loud systolic murmur with the first sound; conducted downward to the edge of the ribs and audible all over the front of the chest, right and left, in the right axillary region as well as in the left, and below the right scapula as well as the left. The murmur was more distinct at the end of forced expiration, less distinct but still quite audible at the end of deep inspiration. It was heard equally well in the standing, sitting and lying positions. It was the loudest murmur I ever listened to and could be heard with the ear removed an inch or more from the chest wall. X-ray examination showed no hypertrophy of the heart.

Mr. J. M. Aged 25. Never been ill. Has a loud systolic murmur over the pulmonary area which is conducted downward to the mitral area and to the right over the aortic area. No accentuation of the second sounds. The peculiar thing about this case was that while the systolic blood pressure was 120, the diastolic pressure was 0. That is, the fifth auscultatory phase persisted down to zero. A good many clinicians consider this to be pathognomonic of aortic regurgitation, although Norris, Faught, Billings and others have seen it occasionally in exophthalmic goiter and other conditions in which vasomotor tone is greatly reduced.

There was no diastolic murmur over the heart and the man had never had any symptoms of cardiac insufficiency. The X-ray examination showed the outline and size of the heart to be normal.

Dr. Hulst examined all of these twenty-five cases with both the fluoroscope and roentgenograph and in no case was enlargement of the heart discovered. They were all accepted as first class risks for life insurance. For the roentgenographic examination the method of Kreuzfuchs was used which is described in the *Munchener medizinische Wochenschrift* of May 7, 1912, combined with the teleoroentgen method described by Williamson. (*Journ. Med. Sciences,* April, 1915.)

As a general rule broad hearts are found in broad chests and narrow hearts in narrow chests. Short heavy people have relatively broad chests, large hearts and high diaphragms and tall slim people relatively narrow chest and narrow hearts. Kreuzfuchs therefore bases his formula primarily upon the relative length of

the greatest transverse diameter of the heart shadow to the transverse diameter of the thorax. But as the usual manner of taking these pictures gives a considerable degree of distortion and as this false magnification rapidly becomes less with the increase of distance of the tube from the plate, the pictures are taken at a distance of two meters. The rays then become practically parallel and the magnification negligible, amounting to not more than one cm. in each diameter. In order to show the outline of the heart in diastole an exposure of two seconds is made so as to include at least one complete cardiac cycle; and in order that the diaphragm may always be in the same position, the patient is instructed to take a deep breath and hold it.

When the picture is taken the outline of the heart on the right and left sides is marked where it crosses a horizontal line drawn across the thorax through the apex of the cardiophrenic angle on the right side. It will be seen that this line is thus divided into three parts, the width of the heart occupying the central one. Kreuzfuchs states that the proportionate length of the three parts from right to left should be 8-24, 10-24 and 6-24. The part occupied by the heart shadow is 10-24 of the width of the chest.

Numerous examinations of healthy hearts have shown that even when the size and weight and age of the individual are taken into consideration there are still great variations in the average figures. It is stated by some authorities that while it should be possible to detect enlargements of 2 cms. in the traverse diameter, in many cases enlargement of 3 cms. may occur without exceeding the maximum figures. Groedel says the normal heart size is variable and enlargement should be judged not by millimeters but by centimeters.

To allow therefore for normal physiological variations, a heart is considered normal when the shadow does not occupy more than 11 or 12-24 of the entire length of the line. While this formula may not be classed as an absolutely accurate method of determining cardiac hypertrophy it is convenient, readily used and probably more dependable in its results than orthodiagraphy and the tables of Dietlen and Groedel.

Case has used the Kreuzfuchs formula in combination with the orthodiagraph for determining the size of the heart in 30,000 cases in the last five years. He believes that while the figures obtained by this method are not absolutely exact, it is to all intents and purposes as accurate as the methods of Dietlen and Groedel, the error amounting to less than 1-60, so that for all practical purposes the Kreuzfuchs formula is sufficient and has the further advantage of being simply and quickly used without the aid of any special apparatus. On the whole he has found that the electrocardiagraphic findings and the Kreuzfuchs formula agree.

The electrocardiagraph, however, is probably the most valuable and accurate method of determining cardiac hypertrophy but it is unfortunately not accessible to all clinicians.

Mortenson states that during the last three years he has taken about 1,500 tracings and feels justified in saying that the electrocardiagraph practically always shows a left or right hypertrophy when present. He finds that in practically every case in which a left hypertrophy is indicated it can be confirmed by physical examination. He has found that in cases of extensive mitral lesions with physical findings of apparent left hypertrophy, cardiac dullness extending way to the left, the electrocardiagraph may show evidence of a right hypertrophy. In such cases a more careful study has made it probably that a mitral stenosis was present as the predominating factor in the mitral lesion causing a preponderance of right ventricular muscle.

A few years ago Lewis of London is said to have made careful dissections of the heart, separating and weighing the muscles of the left and right ventricles, and found that the electrocardiagraphic evidences of hypertrophy in one side or the other practically always tallied with the autopsy findings.

CONCLUSIONS.

1. Functional murmurs are practically always systolic.

2. Diastolic murmurs are probably always pathologic.

3. A systolic murmur *alone* is of no significance and does not indicate valvular disease.

4. The presence or absence of hypertrophy is by far the most important diagnostic factor in differentiating between functional and organic heart murmurs.

5. Absence of symptoms of impairment and a normal cardiac outline on physical and X-ray examination suggest a normal heart.

6. The blood pressure should always be taken.

7. In cases of doubt, the electrocardiagraph may give useful information.

RURAL SURGERY.*

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About one-third of our population reside in proximity to a large hospital; the other two-thirds are farther removed, but are subject to ailments requiring surgical interference similar to those of the urban population. To those of us who practice in these districts where large hospitals are not at our service and which I shall designate rural districts, the question of where to operate is an essential one.

Obviously the only choice is between sending these patients away to some hospital at a distance, or have the work done at or near home. The former has many advantages in certain cases, as well as many disadvantages in others. I shall consider the topic solely from the broad standpoint of the patient's welfare, touching upon the doctor's welfare only as it is incidental to, and co-ordinate with, that of the patient.

Is it better for our rural patients to have rural surgeons equipped to diagnose and perform most of the common major and minor operations at home, or should these be all sent to the big city hospital? While the latter course is advised by the eminent surgeons of the big hospitals, and is largely followed by many other good physicians, I desire to call your attention to some reasons in favor of the former way. As a fundamental basis for comparison, I would say that the same general reasons for sending patients away, apply to surgical, as to medical cases. If all surgical cases should be sent to the hospital for highly specialized treatment, so should all the medical. If we should have no rural surgeons, we should have no medical men there. In other words, if we cannot become equipped and competent to handle the usual major surgical operations at home, we cannot become sufficiently expert to treat the usual major medical cases there, but should send them all away to the specialist. Who will say that either the diagnosis of, or operation for, acute appendicitis, extrauterine pregnancy, or laryngeal stenosis from diphtheria, is more difficult or requires greater skill than does the diagnosis and treatment of Addison's disease, aortis stenosis, or typhoid fever, and who will deny that the prompt action of a competent rural surgeon in the former cases is infinitely better than losing valuable time to take them to the expert at a distance, often over miles of almost impassable country roads in wild winter weather, to find the patient dead before reaching the hospital. Truly, of the two classes of cases, it would seem that if any cases are to be removed to the hospital, it should be the medical ones, for the urgency of immediate relief is seldom so great as are the surgical ones.

As general practitioners occasionally take an obscure case to the specialist for consultation or treatment, so will the general surgeon in either rural or urban districts refer certain surgical cases to others more especially fitted for that particular case, but it does not seem fair to the average rural surgical patient, nor his physician to send such patient away to a hospital, any more than it would be fair to send all patients suffering with parotitis, hordeolum, or enursesis, to the large hospital for specialized treatment.

Let physicians act consistently; if none but minor surgical cases that any good old grandmother can treat, are to be treated at the rural home, then the same reasons should impel doctors to treat none but the minor medical cases there—send all the others to the highly specialized physicians in connection with the highly specialized hospitals with their very highly specialized equipment. In short, let us degenerate to become a mere medical directory, telling patients which place to go, or better still, let us leave all the two-thirds of humanity to the good old grandmothers, Christian Science and chiropractors, and let us move to the vicinity of the big hospitals and assume the eminent specialist business ourselves.

Ours should be an honorable profession, and we should avoid all shams. We were graduated as physicians and surgeons, and we all still bear that title. The ancient barbers did minor surgery, but did not call themselves surgeons. If we do not think we are reasonably well fitted for the surgical end of the work, but prefer to send it all away, would it not be fair for us to show as much honor as did the ancient barbers—omit the "surgeon" part of our title and call ourselves physicians, and surgical directors to hospitals?

Then, conscientiously believing as a logical sequence that we are not able to handle even the medical cases as well as the eminent specialists do in the large hospitals, we would be in honor bound to drop also the first part of our title, physician, and call ourselves medical and surgical imitations of doctors, or "frauds" able only to direct the sick and the afflicted to some one else who knows something, or to some one

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else who will divide his fees with us—on the "sly" of course. Surely Christian Science, chiropractors, Mayr's Wonderful Stomach Remedy, Castoria, Tanlac and Mother's Friend are providing the medical field with humbugs sufficiently gigantic for the great American people without our help—let us be on the square.

I do not contend that all physicians away from hospitals should do major surgery, any more than they should all fit spectacles or make X-ray examinations, but I do contend that every rural community deserves and should support one or more surgeons competent to do the usual major operations. The advantages are many. The cost is less, and need not all be paid in cash as when taken among strangers where the high cost of living—and dying—is much greater. The patient is less nervous in the tranquility of home and friends, than if surrounded by half a thousand students at the big university hospital, the home being more conducive to comfort and recovery. Loving relatives and friends, instead of paid servants are at hand at no expense, to cheer and soothe the patient—a large airy room on the ground floor, in the pleasantest spot in the house that could not be obtained at any cost in a hospital, is hers for nothing. Quietness if she wants quietness, fun if she wants it, sunshine and home—all hers, and when she eats, she gets the eggs and butter fresh from nature's storehouse, instead of Armour's, without the accompaniment of hysterical men or too talkative ladies in near apartments, dead patients being wheeled by her door and she wondering when her turn comes to take the same ride—nurses neglectful, forgetful internes, etc.

It is claimed that the rural room cannot be properly sterilized but it should be remembered that the average room never having had any serious infection therein before, is a much safer place than is the average hospital where hundreds of various infections are constantly present notwithstanding the white walls, and the white gowns of the nurses. In short, the color of the room is not the sole index to its sterility, as the percentage of recoveries from any of the usual major operations in a farm house compares most favorably with those in the big hospitals, not assuming that the rural surgeon is so much better than the eminent surgeon in the hospital, but because he gets the cases so much earlier, and they are not killed in moving. It is not the operation that kills, but the disease that makes the operation necessary.

It is also claimed that you cannot have things to work with at the home, but the competent surgeon will have all things needed in each particular case—he will take his sterilized dressings, ligatures, etc., in their sealed containers, oxygen, pulmotors, or other appliances, also a trained nurse who does not have too many other cases, but gives her best attention in an atmosphere of apple blossoms or new mown hay, filled with the music of nature's orchestra.

It is the policy of the American College of Surgeons as announced by its first president, Dr. J. M. T. Finney, to discourage surgical work except in the largest hospitals and by the greatest surgeons, but the common doctors are told they should handle the emergency cases "as best they can;" but how can we be consistently expected to do this emergency work if we are not considered fit to do the much easier major work not in the emergency class, and where we have plenty of time to properly prepare everything, and even look up any points desired? If a doctor can do a hurried and successful Cesarean section or a tracheotomy in the excitement and hustle of impending or apparent death, or abdominal section for intestinal perforation, etc., in an old log house with cracks in the floor large enough for mice to enter, is this doctor not to be trusted with the easier work of clean operations for gall bladder drainage, appendectomy, herniotomy, hysterectomy, etc., where he can select the time, place, materials, instruments, nurses, assistants, etc.? Further, if we are not recognized as competent in the latter class of cases, who of us would care to face the responsibility, *as an incompetent,* in those emergencies, where conditions are necessarily worse, where we are supposed to believe in our incompetency, where results are almost sure to be worse, and where our failures work so much injustice to us, being right at home where the added enchantment of distance is unknown?

In all fairness to our patients and to us, if we are required to do all this hard emergency work, (and nerve racking when not used to it, as many of you who have met such emergency will vouch for) and if in so doing we run the inevitable risk to our professional reputations, should we not do the other major work where results are so much better? Is it not a fact that practically all doctors who do only emergency surgery, either do no major surgery at all, or else are very incompetent when the emergency arises, and the patient does not receive the benefit of a skilful operation to which he is entitled; and *why* should a doctor fit himself for surgery if never to use it? As well expect the oculist to know the morphology of

the blood in pernicious anemia, or that eminent neurologic expert in the Thaw case to have even a hazy idea of the course of the pneumogastric nerve, whether it comes directly from the skull or from the spinal cord.

Also, it is a recognized fact that the physician who does no surgery is not usually so competent to diagnose surgical conditions as is the one who operates enough to have "inside information," hence very many surgical cases are being mistreated by medicine. Every surgeon knows of many such, resulting in death of the patient because of want of surgical aid. Personally I recall many such mistakes by physicians who are considered very careful, not to mention the innumerable ones by the average practitioner, and others. How frequently has the chronic obliterative appendicitis or the cholangitis case been mistreated for years by as many as a score of doctors for "stomach trouble," liver trouble," "rheumatism," "nerves" and about every available guess, without any one of them ever having mentioned or suspected the true cause of the trouble? In several of my most plainly marked appendicitis cases, even after a surgeon had properly diagnosed the case, some medical man would deny that there was appendicitis there, but the patient had "just caught cold, and it settled there," and this by doctors who enjoy a high degree of public patronage, even to being elected to our state Senate.

To make matters worse, the public is not always able to tell the difference between a good surgeon and a very poor doctor. They all bear the same title, "Physician and Surgeon," which is sanctioned by law and therefore must be correct. The blatant pretensions of the ignorant doctor are believed by the people in direct proportion to the extent of their own ignorance, hence the most ignorant in medical and surgical matters are led to take the opinion of the ignorant doctor in preference to that of the surgeon, and are naturally delighted to find a doctor who promises a cure by a little dope when some one else wanted to have them "butchered," as they are pleased to call it—for "just a little cold, and it settled there."

If the patient has good luck and recovers for a time, as some undoubtedly will, not by, but in spite of, the medical dope received, the dope doctor get the credit, also the cash, while the surgeon gets H——, (brimstone). However, if he dies, said dope doctor just says "Well, I did my best, but his heart gave out. No doctor can be expected to save all his patients, I should have had him a day earlier, the Lord giveth and the Lord taketh away." He should have added, "He died with the best medical help."

This is not meant as an insinuation against the great mass of our educated rural physicians, whom I believe to be more competent than many of their brethren in the largest cities, but this is given only to illustrate the greater need of rural surgeons to help educate the public on surgical matters.

Now, in the interests of such patients as these neglected ones, and others, is it better to tell the rural surgeon to go seek the medical cases, and leave the surgical ones to take their chances of being discovered sometime, then sent, often too late, to the free clinics, this being where most are going, for student practice as on paupers, or should we encourage the rural surgeon to prepare himself for such work, and spread the gospel of surgery till all these neglected cases are saved?

Some eminent surgeons say that it is wrong for us to operate in the homes under such conditions as we find there, but it should not be forgotten that these same eminent surgeons do not fail to accommodate us, at $300.00 per accommodation, when we send for them to operate under exactly the same conditions, except that some of them, contrary to ethics, divide their fee with the doctor who called them, then they go away and leave all the important after care to be done by the local doctor who has not the ability or assurance to amputate a finger or do an adenectomy; and these cases are practically never emergency cases, these latter dying before the foreign surgeon can get there.

Our rural people, comprising this great two thirds of our country's population, demand and will get modern conveniences. As rural telephones, rural delivery and rural electricity have come to give them the joys and conveniences of the large city without its unfavorable features, so they demand that we fortify ourselves by surgical preparedness to safeguard and protect their lives by giving them adequate and efficient rural surgery.

PARAFFINE TREATMENT OF BURNS.

O. H. Cox, M.D.
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The object of writing this tract is to sum up in a conversational way the work and results we have accomplished by the use of the paraffine treatment of burns. Much has been written on this subject from an experimental point of view. We want to add our few items.

On February 10th, a man was burned by the

explosion of a gallon can of coal oil with which he was dousing a smouldering coal fire. Being in his underclothes, these aided the flaming oil to burn him to a crisp by the time he had fought his way through a window and out into the snow and freezing cold.

First dressings were of picric acid, both 1 per cent. solution and ointment. Then phenol ointment was used for a few days and followed this with wet dressings both of hypertonic and normal saline solutions with sodium bicarbonate. All had obvious disadvantages of irritation, soiling, and difficulty to maintain adequately. Patient was a large able-bodied workman. Shock and physical distress was great. Frequent vomiting continued for three days. This was combated with large doses of alkali by protoclysis and by mouth.

Burns were of every degree to deep third. They covered both hands, both palmar and dorsal, to above wrists. Both feet were involved to above malleoli. The trunk around to the mid-axillary line was so deeply burned that all the skin later sloughed off and this extended down the thighs nearly to the knees and included the penis and scrotum. The neck and face were included up to the nose. In fact, the whole anterior half of the skin surface from the knees up came away, as well as that of the hands and feet.

Treatment was begun as described. It did not seem entirely satisfactory. One thing in favor of the patient was his robust constitution and the fact that he early regained a large appetite and bowel action was free. Despite this, his fever ranged from 100 to 104° F. Pain was constant and when dressings were torn away almost unbearable. The daily shock and intervals of dread proved too much, and emaciation, despite high feeding, became extreme. We had read of "Ambrine" some time previous as written up exploitingly in the lay press, the report purporting to come from French war hospitals. Much was our satisfaction to find an article by Lt. Col. Hull of the R. A. M. C. in the *Journal of the A.M.A.* stating that he had used a paraffine formula of his own, superior to the patented "secret" product which cost $5 a pound, and has proved to be practically all paraffine with a little asphalt, flavored c oil of sesame. Directions for making and applying were so simple that we immediately made up a supply and began its use on March 1st, i. e., eighteen days after the accident. The freedom from pain was remarkable. Dressings were not distressing, and the skin began to grow in from the edges with remarkable rapidity.

Naturally, there was some secretion containing low-grade cocci. About every second day, a new dressing was applied. Interesting to note were the drops of clear serum which would exude thickly over the flat firm granulation areas after these had been wiped clean and dry by cotton sponges. I always referred to this as "Nature's healing balm." The brush had to be applied quickly as the serum was mopped up. The feet and hands healed very early *without scarring,* though the new skin is not normal in appearance yet. The skin on the trunk, considering the area destroyed, has made rapid progress, growing from around the umbilicus, pubis, and a few small scattered islands, all to coalesce with the new growth from the edges.

As a contrast to this case, there came in only recently a burn of the skin of the abdomen over the left hypogastric region about six by eight inches, produced by a hot water bottle having been left on an unconscious man.

Large blebs covered this area. "Ambrine" was applied and the pain ceased. Two days later, the temperature shot up, the cause being sloughing of the *whole injured skin area.* Dakin's solution was used to stop any bacterial action and remove the odor. The whole skin now came away in one large necrotic sheet and fresh granulations were established over the subcutaneous tissue. "Ambrine" has been used since and the inward growth of skin is very gratifying to patient and surgeon.[1] July 10th grafts growing freely.

This case was handled by the use of two of the newest, most recently accepted methods developed by reparative surgery. Results have been even as good as those claimed by the manufacturers of proprietary products, which are usually optimistic if not exuberant. The difference in cost is worth mentioning. Various kinds of the paraffine preparations are being sold at $1.00 to $1.50 a pound. With paraffine not more than fifteen cents a pound, the following preparation need not cost more than twenty cents a pound, and if made in large quantities, the cost is even less:

℞

Paraffine	65	parts
Petrolatum (Yellow or White)	30	parts
Resorcin	1	part
or		
B-Naphthol	0.25	part
Oil of Eucalyptus	2	part
or		
Balsam of Fir	1	part

1. Grafts placed on June 15th but still too early to more than surmise the reaction when "Ambrine" used to cover.

Melt the paraffine and petrolatum together. Dissolve the resorcin or B-naphthol in absolute alcohol and add to the hot melted oil, and when cooling add the oil of eucalyptus or balsam of fir. To apply, use a small varnish brush, which costs about fifteen cents. Keep this in a tall glass partly filled with alcohol. While on this subject of costs, you can look up how to make the Dakin-Carrel neutral hypochlorite solution as given in the standard articles in recent medical journals and you will be surprised to find how inexpensive it is.

We might add that certain industrial surgeons who have large groups of men committed to their care that are subject to burns of all sizes and degrees, are finding these preparations such an improvement over the older methods that they wonder how they ever got along in the old manner.

CARREL-DAKIN METHOD OF TREATING WOUNDS.

The purpose of reporting these few cases is, in a small way to add to the growing literature on the new treatment of wounds by the Carrel-Dakin method.

We can read extended treatises and arguments for and against the method, but it is our purpose to try and add favorable comment and not destructive criticism.

One case in particular was in every way quite comparable to what we judge would be an average moderately severe casualty of modern warfare.

The morning of May 16th, 1917, occurred a severe explosion of unrecognized dangerous detonation caps which were being unloaded from a garbage wagon on a waterfront pier. Five men in the immediate vicinity were killed and three injured, and a team of horses mangled. This might compare to a gun's crew. The subject of this discussion was not more than fifteen feet from the site of explosion walking towards it close to and directly behind a shipmate. The latter was frightfully mutilated beyond recognition and the fragments thrown many yards into the river. The patient thus had much of the force broken, and though he was thrown under some planking was able to crawl out as help arrived.

Those rendering first aid say that his clothes were blown practically all off him, his watch was smashed, and he was plastered with blood and flesh from head to feet. This proved to be mostly that of his mate, from the waist up. The general clinical picture was one of extreme shock for forty-eight hours, along with the irrationality and prostration of moderately severe concussion.

Three large wounds were found and many smaller ones; two in the right leg, one in the upper femoral region just below the middle of Pouparts fold, and the other over the head of the fibula exposing the underlying tissues over an area of two inches in diameter and extending downward between planes of muscle. The larger wound in the left leg was on the inner aspect of the mid-thigh and would nicely hold a golf ball. The other injuries were not deep, but covered practically all the skin of both legs anteriorly. Dirt, glass, splinters, small pieces of bone and other debris found on a garbage dump heap were driven in and imbedded even against the bone over the tibial crests.

First aid consisted of morphia. And from the wounds were extracted the above mentioned foreign bodies and human flesh. All were swabbed out with Tr. iodine and sterile cotton applied.

About seven hours after injury the use of Dakin's solution was begun. Light packs of gauze were laid in the deeper wounds and the entire injured surfaces covered with layers of gauze and kept saturated with the solution. Thick dry pads were placed over this to prevent too rapid evaporation. Fifteen hundred units tetanus antitoxin were given *intravenously.*

The point we want to emphasize is that there was never any sign of infection. Temperature never went above 99° F. and though the larger wounds exuded a sero-sanguinous fluid for several days, it had no odor of real pus and the few bacteria found under the microscope were non-descript cocci and soon disappeared. The red granulations always spoken of early put in an appearance and healing went on as rapidly as in a freshly incised wound.

The physical condition was very poor for some time. Pressure necrosis on back, heels, and other points, began to threaten almost over night, showing to what a low degree the vitality had been forced.

We feel confident that had any toxemia of infection been added to the general devitalized condition that a fatal termination would have taken place.

A second case was injured in an industrial plant. Manner of injury was by the foot being dragged along a steel rail in front of a car wheel, the man hopping on the other leg to prevent the wheel passing over. There was a deep compound fracture of the great toe, and dirt was ground deeply into the tissues. Of course, the metatarsal-phalangeal joint was badly traumatized. Dakin's solution was used immediate-

ly through a perforated tube laid in the wound, and no sign of infection appeared, though dirt continued to stain the dressings for many days. The interesting observation was made that the skin on the dorsum of the foot became very irritated before the surgeon remembered that vaseline should be applied.

The attending surgeon states that he has had many similar cases from the same plant. None of them have made such a satisfactory progress as this one. All, despite continuous irrigations of all kinds of usual antiseptics, would slough and discharge, typical of the "laudable pus" days.

Other less serious or less successful cases could be cited from our small experience. And it has been our findings that if the solution reaches *all parts,* the infection will not appear, or will disappear promptly. For instance, a thecal infection did not become better with a wet dressing to the hand, though drainage was established by a small opening, until the part was laid open and all parts frequently subjected to the chlorine action.

A compound fracture of the thumb came in from a lumber camp several days after injury. A filthy rag inadequately covering the wound had been applied. Sepsis, as signified by local heat, color, odor, and discharge, was setting in. It promptly cleared when the neutral hypochlite solution was made to penetrate to all recesses every two hours.

Nearly a year and a half ago, when the author was serving in the Marine Hospital, Chelsea, Mass., a compound fracture of the first metacarpal came in. The patient, a Greek laborer on an Army dredge, had had the thumb literally sheared off in some pumping machinery. The small strip of tissue unsevered contained the princeps pollicis artery, and so by intravenous anesthesia the thumb was sewed back on and through and through drainage established. At that time, we had only the form of Dakin's solution made up with boric acid. The part never became infected, though the tissues were evidently browned and devitalized by the free alkali.

A good functional result was secured. The last anecdote is to illustrate the improvements possible in a short time from both a chemical and clinical point of view.

We respect the man who makes two blades of grass grow where only one grew before.

Let us accordingly honor the men who have taught us how to prevent all germs from growing where billions flourished in times gone by.

BRAIN LESIONS—CASE REPORTS.

L. P. PARKHURST, M.D.
GRAND RAPIDS, MICH.

I believe a retrospective consideration of a few cases of brain lesion that I have cared for may be of some value to the general practitioners, the occasional operator and the surgical specialist.

I will refrain from going into lengthy details in any of the cases; neither will I impose on your valuable time by giving book reviews or a commentary on the writings of others. These you can read up at home, if you care to.

I approach this subject without trepidation because I realize that we are all deplorably deficient in our knowledge of brain lesions, whether we are frank enough to admit it or not. Abdominal surgery, plastic, orthopedic, eye, ear, nose, throat and general surgery—all these other branches have attained such a high degree of perfection, it seems a pity so few have made themselves at all conversant with this undeveloped, highly important, wonderful field of study. If reporting these cases will be of any help in the study I shall be very glad.

CASE 1. McOnnell boy, age 10, frontal bone, just above both eyes kicked in by horse. Profuse hemorrhage and loss of half ounce of brain substance. Wound cleaned, loose pieces of bone picked out, decompressed pieces pried up or clipped off and removed, wound closed with silk after controlling hemorrhage as well as possible, wound covered with gauze, pad held in place by a roller bandage. Uneventful recovery. Primary union.

CASE 2. Allen boy, age 12. Right half of frontal bone and part of temporal kicked in by horse. Porfuse hemorrhage, considerable brain (about an ounce) oozed out, wound cleared of manure and sand, then cleaned up, bone pieces pried up in place, loose spicula removed, depressed edges cut smooth, hemorrhage controlled as well as possible, wound closed with silk, light sterilized dressing, primary union. Uneventful recovery. To excuse the horse would say, while in his stall boy came up behind him and struck his legs with a bridle.

CASE 3. Chas. Johnson, Swede, age 25, farmer. While sitting on side of bridge fishing was struck across top of head by a powerful Bohemian, with the edge of an ash fence board. Edge of board crashed through both parietal bones, breaking in a strip about six inches long—a little more than an inch wide and depressed one and one-half inches at center. The Swede fell into the water, but was quickly fished out by passers-by and rushed to my office.

Shaved and cleaned up field, dissected back flap, to expose fracture entire length, lifted up compressed strip after cutting one edge back a little, closed periosteum with fine cat gut, sutured skin with silk, applied simple, light dressing and wound closed by primary union, uneventful recovery. The

Bohemian was tried twice in this county for damages, but recovery was so complete Chas. failed to recover.

CASE 4. Mrs. G. Willard, farmer's wife, injured in runaway. Thrown out violently striking on head and face on stone pile. Right supraorbital fracture of frontal bone, superior-maxillary broken loose from all its bony attachments; to floor of skull, to nasal and facial bones and it was fractured anteroposteriorly through middle. Wired superior maxillary together. Lifted nasal bones to place and retained them by a hard roll of gauze bandage in either nostril and two needles run through under base. Wound silk thread from one end of needles over nose to other end, to help retain things in place. Used lower jaw as splint to lift up and retain superior-maxillary in place. Placed a retaining suture in periosteum of either end of facial bones. A few pads held in place with adhesive, a light sterile dressing was finished. An upper and lower cuspid being out gave room for tube through which she was fed. Very good recovery with but slight deformity. Right eye-ball was a little lower in face than left, on account of her letting an arm fall on that side of face pressing down lower orbit at a moment when nurse was off her guard. Tried to have her watched closely to guard against just such accidents. Aside from the right eye being a little low, her recovery was all that could be desired. Digressing would say she lived twenty years after and died from exposure, many rods from home, poorly clad, in a blizzard, where she had fallen, unable to find her way back to house.

CASE 5. Gould Liebler, laborer, age 30, fell or was thrown from porch platform onto head in cobblestone gutter, December 13, 1911, at Caledonia. Was called by local doctor to satisfy family—doctor thinking case hopeless and saying he would be dead before I could get there. Found him with a pulse rate of 20, respiration 4, just an occasional gasp. Left fronto, temporal region crushed in. Round depression about three inches in diameter where he struck on stone as blood stains in gutter showed. After hastily cleaning up region of injury, laid flap down to expose fracture, picked out the pieces that were driven into brain, trimmed edges of bone depressed, but not detached, scooped out the blood clots—some of them being fingers length down under the brain. Closed the dura with 00 chromic cat gut, skin was sutured with silk worm gut. When last two sutures were inserted patient moved an arm and leg. Light sterile pad held in place by a roller bandage completed the dressing. By time dressing was completed respiration and pulse were normal. Wound closed by primary union. Uneventful recovery.

Three months later began working for G. R. & I. in freight office and later transfered to passenger gate tender, which position he still holds—six years later.

These five cases were operated without anesthesia of any kind other than the profound coma produced by the injuries. I think in every case a little ether would have taken away their only chance of recovery.

These cases may serve to illustrate the justice in making a prompt effort to save what may appear to be a hopeless case. You lose nothing and will sometimes be rewarded by recovery.

Have so far only reported cases that recovered. I think we can often learn as much by discussing our failures as by reporting our successes. I will, therefore, now report some of my fatal cases for the sole purpose of bringing out a discussion and if possible some suggestions whereby we might have done better in an effort to help these unfortunate individuals. The above cases were fractures of top, front or side of skull. All had profuse hemorrhage and several lost considerable brain substance. First of this fatal group:

CASE 6. E. Gibbs, age 40, traveling salesman, year 1887. Had we possessed then even the little knowledge of brain surgery we do at present time, I think we should have made a decompression and in all probability saved the patient.

Patient fell down stairs on head in hotel at Caledonia while intoxicated. Lay in hotel unconscious for three days, then began to brighten and in ten days resumed his occupation, apparently well. In four weeks had to give up and return home. Would try to walk straight, but would walk to right and off the side walk every few rods, then come to left or inside of walk, and would try to stay there, but would soon step off right side again in spite of his efforts. Arriving home, he sent for his old family physician who treated him for about six weeks. Grew weaker, soon confined to bed, partly lost use of right arm and leg, became idiotic with spells of mild delirium. At this time I was called to take charge of the case. My treatment was supportive and expectant and he died in two weeks. No autopsy. There was no fracture or depression to be found, evidently case was concussion with intra cranial hemorrhage at left motor centre. We had ample time to make a decompression, though at time I was called his condition was bad. He was anemic poorly nourished and weak and I doubt if he would have stood the profuse hemorrhage that would have occurred had a decompression been resorted to. Possibly early operation might have been successful.

CASE 7. George Wilson, farmer of Yankee Springs, kicked in back of head by horse, comminuted fracture of occiput. Carried on cot in buggy seven miles to Middleville and shipped here in baggage car, removed to hospital in ambulance. Much blood flowed from ears; was in dying condition when admitted, and succumbed in short time. No regrets in this case, as I think nothing could have saved him at time he arrived.

CASE 8. Mrs. Miller, knocked down on Monroe avenue by an automobile, fracture across base of skull, considerable bleeding from both ears. Rushed to hospital and died in forty minutes. Treatment expectant.

CASE 9. Mrs. Postema, buggy struck by fast M. C. R. R. train, carried some distance on pilot, taken off and rushed to hospital, profuse bleeding from ears. Pulse not perceptible at wrists. Saline transfusion, strychnia hypodermically. Rallied slightly, skull fractured at base. Trephined in hope of relieving intra cranial pressure. Died in less than hour after admission.

CASE 10. Chamber maid at Crathmore Hotel,

dove down three stories through light well—skull crushed like an egg shell. No attempt at treatment, died in thirty minutes.

CASE 11. Mr. Michele, farmer, thrown violently on head in cobble stone gutter by runaway horse. Whole top of head crushed in, median vessels cut by sharp bone edge. Laid flap back when half pint of brain substance pushed out, followed by torrents of blood. Bled to death before much could be done toward controlling the hemorrhage.

CASES 12 and 13. Mr. Carl and Mr. Wilcox, I might refer to as some of you possibly saw them. They both went the rounds from doctor to doctor until finally death relieved them and a diagnosis was made in each case at the autopsy. Both died of brain tumor. Wilcox was sick about a year and Carl over two years. Headache and delirium were only symptoms complained of or noticed.

I would like now to report two more of the curable type of cases.

CASE 14. C. E. Taylor, California school teacher. Complaint, subjective symptoms. Clumsiness and weakness of left foot, hand and arm. Jerking of left arm and hand followed by headache, nausea and vomiting.

Family History.—Negative.

Patient's History.—Negative, except for injury to head by being thrown from horse many years ago. This was followed by no serious symptoms.

Present Illness.—In June, 1915 began to notice jerking of left hand and arm, accompanied by headache, nausea, vomiting followed by numbness and gradual increasing weakness of left leg, foot, arm and hand.

Early in February entered Peter Bent Brigham hospital, Boston.

Physical Examination.—Negative except weakness of left arm and leg and malnutrition.

Neurological Examination.—Weakness left arm, leg and face, possibly very little hyperasthesia of left side. Exaggerated deep reflexes—left side. Corneal reflexes active—both sides. No choked discs, Babinski positive left, ankle clonus left.

X-ray showed no signs of intra-cranial trouble. Wassermann reaction negative.

Diagnosis.—Right para-central, pre-central tumor, at edge of R. hemisphere.

Operation.—February 19, 1916, by Dr. Cushing. Enucleation of Parasagittal Endithelioma. Good operative recovery. Paralysis of left side improved, left hospital 30 days after operation, walked about for week before leaving hospital.

Post-operative.—On August 12 began having convulsion starting in left hand and arm. From August 12 to December 19, had ten Jacksonian convulsions averaging one once in thirteen days. On January 2, 1917, resumed his school room work. Thinks he is gaining in strength, though leg and arm are still clumsy. Was asked in to talk with this case and encourage him in submitting to an operation. Am indebted to him for reports from time to time by mail since his return home.

AUTHOR'S PERSONAL CASE.

CASE 15. L. P. Age 50. Occupation, surgeon. This report should interest us all as many of us, if not most of us, saw him and none of us could make a correct diagnosis, although Dr. Young said there were symptoms of brain tumor and it was out of his line.

Feb., 1915, when in apparently good health, was seized with a Jacksonian convulsion starting in left arm with loss of consciousness. This occurred soon after eating a hearty meal.

In March, same year, began having severe pain and lameness in left shoulder. Would vomit from one to three times daily one hour after meals. The pain and lameness gradually extended to elbow and hand then hip, knee and foot. In fact, whole left side. Muscles became helpless and atrophied. Vomiting was persistent. In August following another severe Jacksonian convulsion occurred starting as before in left arm. This also was soon after a hearty

dinner and with loss of consciousness.

Following this there was partial paralysis of motion on left side, soon left toe began to drop and to drag—hard to lift left arm or leg. All the above symptoms gradually intensified until perfect helplessness, paralysis of left side and confinement in bed. Emaciated and anemic from not retaining foods, constipated because not enough substance entering bowel to excite peristalsis.

Tendon reflexes exaggerated on left side, sensation on left same as on right.

Family history good. Father died at 70 of apoplexy. Mother died at 90 of old age. She was mother of five grown up healthy children.

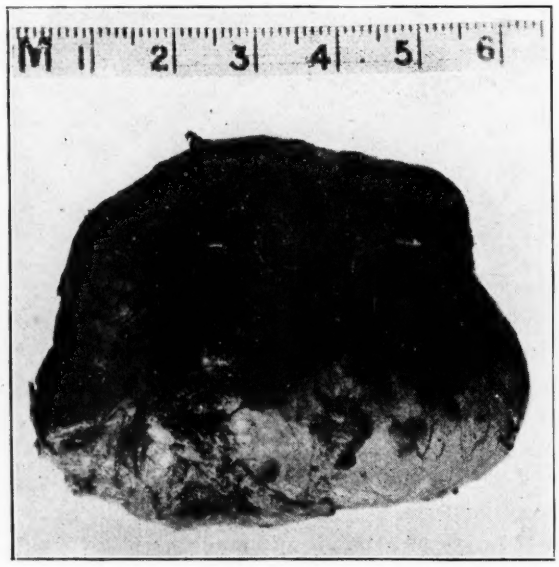
No tuberculosis, cancer, syphilis or hereditary troubles on either side.

Individual history good. Never had gonorrhea, syphilis nor tuberculosis. Had diphtheria

about eight years before with no post diphtheritic paralysis. No injury to head to which this sickness could be directly and positively traced, although two and one-half years before, while returning from St. Paul, our train plunged through bridge over the swollen Little Wabash-aw river. This caused a concussion that confined patient to bed for two days, caused dizziness and lassitude for week or two, then injury unnoticed and forgotten.

Had R. inguinal hernia operated by Dr. Kellogg eight weeks before first convulsion. Struggled desperately during attempt at nitrous oxide anesthesia which was later supplanted by ether. No head trouble immediately following this. Wound healed kindly and was dismissed in three weeks. In evening after first day's work following hernia operation had what appeared to be a faint, lasting a few minutes without any muscular contractions. You will remember there occurred a real Jacksonian convulsion five weeks later and another in August. This August convulsion being followed by paralysis.

Bear this in mind as I shall refer to it later. After August would have, every four or five weeks a light convulsion starting in left hand without loss of consciousness.



Treatment.—Nothing to speak of being done here, patient spent some time in Henrotin Hospital, Chicago under the noted stomach specialist, Dr. Williamson, who with his diagnostician Dr. Hartung pronounced case cancer of stomach.

Next went to our eminent Dr. Harris who diagnosed case one of alcoholic epilepsy, although not a drop of alcoholics had been taken for eight months, nor (with exception of one month when much whiskey taken) had any alcoholics been taken for a year previous to this eight months' abstinence.

Next went to West Baden where the doctor said if he was to make a diagnosis, would be inclined to agree with Dr. Williamson that it was stomach cancer. Four weeks later he said he was mistaken for had it been cancer, the treatment would have aggravated the trouble.

Next went to Rochester to Dr. Mayo who

with his diagnosticians, declared there was absolutely nothing wrong with the stomach. That it was a cerebral hemorrhage for which nothing could be done. That it would be but a short time before another would occur that would cause death.

Next went to our dear friend, Dr. Ochsner, at Augustana hospital, Chicago, whose diagnostician, Dr. Smithie, pronounced it a case of brain tumor. Dr. Ochsner concurred in the diagnosis and consented to make a decompression.

Assisted by Dr. Persey, a window about 4 in. by 4 in. was sawed out of right side of skull. Alarming hemorrhage occurred. Nothing abnormal was found. Wound closed leaving the large piece of bone out, to hasten closure, believing death imminent, (I was told). Patient rallied from operation. Wound of soft parts closed kindly. Slight bulging from blood or fluid for four weeks. Apparently slight improvement for few weeks probably from lowered blood pressure incident to the severe hemorrhage. Then grew progressively worse. Was shipped back to Dr. Ochsner in hope of having another effort made. The doctor declined to make another effort believing it useless, think-

ing death would soon relieve the suffering, and saying time was the only remedy left.

Patient not being willing to give up, arranged to be shipped to Boston to our most eminent brain specialist, Dr. Cushing. After the routine examination, Dr. Cushing concluded there was a brain tumor, but that they had gone in too low to find it in operating. He operated just above opening left by Dr. Ochsner and also being too low failed to get it, but located it and found it to be benign. Closed the wound that healed promptly. Kept dry and all sutures were removed in forty-eight hours.

Six days later a final and successful attempt was made by sawing out large piece from vertex of skull, opening dura low down, reflecting it upward, thus keeping off the large median vessels. This exposed the large tumor a fibroendithelioma, nearly round, measuring three inches in diameter, that sprang from the aracnoid membrane near bottom of the fissures of Rolando and the longitudinal fissure.

It was carefully enucleated. By hugging tumor, injury to brain was avoided. Wound closed, healed quickly, all sutures removed in forty-eight hours. After removal of sutures, a gauze towel covered by calico cap, contrived by Miss Hanson, superintendent of nurses, constituted dressing until for cosmetic effect, a black silk skull cap supplanted the calico. A light cap was agreeable until hair grew out enough to protect head from cold.

Motion on left side began to return within two days after removal of tumor. And in three weeks could get up alone, and walk unaided, except by cane, whole length of long corridors. Left hospital four weeks after last operation.

In each of last two operations bone flaps were returned to their place where they kindly reunited. Pain in head was intense for six days after each of the three operations and only partly relieved by a 5 gr. dose of veronal, twice in twenty-four hours. Two light doses of Tr. opium were given in Chicago and one in Boston on third night after last operation.

Gradual improvement since day tumor was removed, though not quite up to normal strength at this time. Removal of tumor relieved constipation, vomiting, pain, convulsions, loss of appetite, stopped loss in weight and the paralysis disappeared from one group of muscles after another until there was not one muscle left that was paralyzed. In fall could walk four miles without stopping to rest, good appetite, ate anything rest of family could, digestion normal.

I might add there were a few light Jacksonian attacks for a time after operation, but none since Sept. 6. Evidently it takes a little time for brain to fall back into place and readjust itself after being compressed so long. None of these caused change of position or loss of consciousness. None occurred in night, either before or after operation.

For a year previous to removal of tumor, on Dr. Kellogg's advice, left out all tea, coffee, meat, tobacco and alcoholics. This advise is his routine on general principals, I believe. Since operation, tea, coffee, meats, tobacco have been used but no alcoholics.

During the examination by the diagnosticians for Drs. Harris, Williamson, Mayo, Ochsner and Cushing, the Wassermann and other routine blood tests were made. Every one being negative. I think every one made fluroscopic and X-ray examinations. There were many plates made of the abdominal viscera all showing normal condition but one, that by Dr. Harting in examining for Dr. Williamson. He thought picture showed a little thickening at pylorus. After his saying so, I thought I could see it too. Eight X-ray plates of head were made by the different specialists in X-ray work —all of which showed nothing abnormal.

After Dr. Cushing examined the two plates made there for him, he remarked that they never did show anything. I understand it is used but is useless in examinations for intra cranial tumor.

There were no choked discs. All the eye examinations showed eyes perfect. Here is an important thing to remember. "A Jacksonian convulsion in an apparently healthy person past 50 years of age followed by paralysis means brain tumor." (Cushing).

If you find in addition to this choked discs and the text book symptoms of vertigo, stupification, slow pulse, etc. (all of which were absent in this case), so much more to confirm your diagnosis. It would be easier if they were all as the text books describe them.

Cause.—There are a number of theories as to cause of this class of tumors. The one held by Dr. Cushing is that they come from injury. Where is there a man living who has not had his head bumped? Yet how few have tumors.

Krause mentions Faradic electrode as having been tried in certain cases as a means of helping locate a brain tumor and mentions one case in which a Jacksonian attack was produced by the electrode over the tumor. Will say that no one resorted to this test in the case under discussion. Have gone into detail in these last two cases because they teach some things the others

do not. They are interesting in many ways. They show how weak we are on diagnosis of intra-cranial lesions and the need of more surgeons taking up the thorough special study of this highly important branch.

There is no danger of the field being overcrowded for sometime, at least. The obscurity of the reflex symptoms, the high operative mortality, the brain hernias, meningeal hernias, violent hemorrhage, cancer, etc., together with the uselessness of the X-ray in making a diagnosis having all had a retarding influence in the development of this special branch of surgery.

Many of these cases have shown the harmlessness of roadside, barn-yard and ordinary house dirt in wounds when compared with the infectious hospital germs. Many are the surgeons who have learned and reported this fact. Just as good results may be obtained by operating in a clean private residence as in a hospital, if equal antiseptic precautions are used. It is not as convenient, but can be done by putting enough work in the preparation.

REPORT OF A CASE OF BULLET WOUND OF THE PENIS, ABDOMINAL WALL AND STOMACH.

CHAD A. VAN DUSEN, M.D.
OGDEN CENTER, MICH.

While a laparotomy for bullet wound of the stomach or intestines is fairly common, nowadays, this case seems sufficiently unusual to warrant reporting.

Accident.—On March 23, 1917, H. W., a male, age 17 years, while standing on the porch steps in the rain, allowed a 22 caliber rifle to slip through his wet hands in such a manner that the hammer struck the step and discharged the load, upward, first through the penis and then into the abdomen about half way between the umbilicus and the pubic hair.

Examination.—I was called immediately, about 8:30 a. m., and found the patient on a lounge, very pale, pupils dilated and vomiting or retching every few minutes. The vomitus contained some fresh blood. There was very little hemorrhage from either the penis or abdominal wound. The respirations were shallow and thoracic also somewhat faster than normal. He complained of severe pain in the epigastrium. The pulse was accelerated but fairly good. I gave a hypodermic of morphine sulphate grs. ⅛ and began preparation for a laparotomy in the home as I did not deem it advisable to move him, over extremely rough roads, to the hospital which was 14 miles distant.

Operation.—Drs. Salsberry of Lyons, Ohio and A. E. Lamly of Blissfield, Mich., also a trained nurse were summoned and the abdomen opened, under ether anesthesia, about 11:30 a. m. The incision was started at the wound of entrance and followed along the path of the bullet to where it entered the abdominal cavity and extended several inches higher. The transverse colon appeared to be directly in the course of the bullet but was uninjured, probably due to its lower position when the patient was erect. In the anterior surface of the stomach, the bullet had ploughed a groove 3 in. long perforating all the layers of the viscus at both ends and at numerous points along the course. These perforations had allowed some of the stomach contents to ooze out and together with the wound of the rectus muscle had caused considerable internal hemorrhage. Beyond the stomach, we could see no evidence of the further course of the bullet and thought, at the time, that it might have remained in the stomach. The rent in the stomach was closed by a continuous through and through suture of catgut and over this a continuous Lembert suture of linen with several locks. Several clots and some fluid blood were removed by sponging and the abdomen closed, leaving a gauze drain to the line of sutures in the stomach, from the upper angle of the incision, and a rubber tube drain extending deep into the pelvis from the lower angle.

After-Care.—The patient was placed in the Fowler position and continuous enteroclysis given for 36 hours. Hot water was allowed from the start in teaspoonful doses and the amount gradually increased. No food was allowed by mouth for four or five days and then weak broth and egg-albumin cautiously tried out. At the end of a week soft solids were being given and after two weeks general diet, with some restrictions. There was scarcely any vomiting at any time. Nutrient enemas were attempted but only two were retained. Morphine was used freely for four or five days and the bowels moved only by enemas for ten days.

The gauze drain was removed in 48 hours with some difficulty, and this opening promptly closed in a few days. There was profuse drainage from the lower angle of the incision which gradually thickened to creamy discharge with a fecal odor. The rubber drainage tube was gradually shortened and out at the end of a week and the discharge ceased after three weeks.

The penis became badly swollen and ecchymotic but there was little difficulty in urination and perfect resolution followed with no signs of infection. The bullet went through the right corpus cavernosum. Nothing was done to the penis beyond an attempt to keep the external wounds clean.

During the second week after the temperature

had been normal for several days, there was a moderate rise of the temperature and pulse and some pain in the left chest upon deep breathing or moving.

Upon examination, tubular breathing and dullness upon percussion were discovered over the lower left lung especially in the back. This area of dullness gradually diminished but was still very apparent on April 23rd and it was thought that, perhaps, the bullet by penetrating the diaphragm and wounding the lung had caused this consolidation.

However, H. A. Dachtler, Roentgenologist, of Toledo, Ohio, located the bullet in the abdominal wall, one-half inch deep and about the center of the scrobiculus cordis. It did not apparently enter the pleural cavity and was not disturbed as it was causing no discomfort. The diaphragm was reported high on the left side and this may have some bearing on the percussion sound.

During the third week he was up in a Morris chair much of the time and the fourth week was allowed his clothes.

During the fourth week, after eating some rhubarb sauce, there was fever, vomiting and marked prostration but these symptoms were routed by a cathartic and fasting.

Conclusions.—I believe that the keynote of success, in these cases, is struck, by operating immediately and with as little preliminary disturbance of the patient as possible. Where the hospital is distant and the way rough, provided the surgeon is properly equipped, this is best accomplished by operating in the home.

This case supports the practice of European surgeons of operating as soon as possible all cases of wounds of the hollow organs and treating expectantly wounds of solid organs if it can be proved that none of the hollow viscera are injured.

It seems remarkable that there was not more hemorrhage from the penis as the bullet went through the corpus cavernosum. It also seems remarkable that the same bullet could wound both the penis and stomach and no other organs of importance.

The lung symptoms, during the second week, were evidently due to a secondary pneumonia. The boy seems to be in very good condition at the time this is written (May 4, 1917).

PROPAGANDA FOR REFORM.

Some Misbranded Cough Remedies.—The following "cough remedies" have been declared misbranded under the U. S. Food and Drugs Act, chiefly because the curative claims made for them were found to be false and fraudulent: Baker's Remedy for Catarrh, Coughs, Colds and Rheumatism is essentially sugar and water with a small amount of cubebs, potassium iodid and creosote. Mathieu's Cough Syrup, formerly called Syrup of Tar and Cod-Liver Oil, containing little, if any, tar and no cod-liver oil, but containing alcohol, chloroform, creosote and menthol. Forrest's Juniper Tar. containing alcohol, pertoleum and oil of tar. Terraline Plain, found to be simply liquid petroleum. Tarraline with Heroin, found to be liquid petrolatum with heroin. Classe's Cough Syrup, a syrup containing alcohol, glycerin, tolu and wild cherry, and having an odor of tar. Essence Menthol-Laxene, containing alcohol, menthol, ammonium salts, chlorid, sugar, drug extract and an unidentified alkaloid. Brown's Acacian Balsam, containing alcohol, acacia, nitrate, licorice, meconic acid, tartrates, reducing sugar, sodium and potassium compounds. Sykes' Sure Cure for Catarrh. containing potassium chlorate, ammonium chlorid and small amounts of alcohol, hydrastin and methyl salicylate. Warner's White Wine of Tar Syrup, containing opium and alcohol, no tar and but an insignificant amount of wine. Rawleigh's Golden Cough Syrup, containing alcohol, chloroform, menthol, guaiacol and perhaps horehound. Rawleigh's Ru-Mex-Ol, containing 26½ per cent. alcohol and vegetable matter in which rhubarb was indicated. Gooch's Mexican Syrup of Wild Cherry, Tar, etc., containing morphin and alcohol, sugar, glycerin, methyl salicylate and benzaldehyde as flavor, and small amounts of tar and cherry (*Jour. A.M.A.*, June 16, 1917, p. 1863).

Brom-I-Phos.—The Council on Pharmacy and Chemistry reports that Brom-I-Phos (The National Drug Co.) is not eligible for admission to New and Nonofficial Remedies. The label declared the preparation to contain iodin, bromin and phosphorus in an aromatic base. The A.M.A. Chemical Laboratory found that Brom-I-Phos contained no free iodin, no free bromin and no elementary prosphorus; instead it appeared to be an alcoholic preparation containing iodid, bromid and a little phosphate. The Council rejected Brom-I-Phos because the statement of composition was unsatisfactory and misleading; because the therapeutic claims were exaggerated, and because the combination of bromin, iodin and phosphorus, or of bromid, iodid and phosphate is irrational (*Jour. A.M.A.*, June 30, 1917, p. 2001).

Flavored Epsom Salt.—When a physician prescribes a dose of Epsom Salt to be taken in one of the official aromatic waters, he does not create a new invention. Yet the U. S. Patent Office has granted a patent for the "discovery" of a method for flavoring Epsom Salt (*Jour. A.M.A.*, June 23, 1917, p. 1914).

TRANSACTIONS

OF THE

Clinical Society of the University of Michigan

Stated Meeting, May 9, 1917

The President, CARL D. CAMP, M.D., in the Chair
Reported by REUBEN PETERSON, M.D., Secretary

THE ROLE OF THE STREPTOCOCCUS IN THE RECENT EPIDEMIC OF ACUTE RESPIRATORY INFECTIONS.

HOWARD H. CUMMINGS, M.D.
Executive Head of the University of Michigan Health Service.

Acute infections of the mucous membranes of the nose, pharynx, tonsils, larynx, trachea and larger bronchi are grouped and designated as acute respiratory infections. The laity has named these infections "colds," and has been trained to believe that they are the most trivial ailments that can befall mankind. It is regrettable that many physicians concur in this opinion and fail to study cause and effect. We treat a young person for an acute respiratory infection. In a few days the individual is apparently enjoying good health. One month later we are consulted because of a swollen joint, nausea and vomiting, small amount of urine, or recurring attacks of fever, loss of strength and palpitation. We search for the trouble and find an arthritis, nephritis or endocarditis. The serious disease is treated. The innocent appearing little respiratory infection is forgotten.

During the past five years, severe epidemics of acute respiratory infections have occurred each winter in this country. These have emphasized the importance and seriousness of the respiratory infections. In January, 1912, Mann described an outbreak of septic sore throat occurring in Concord, N. H. During the winter months of 1911 and 1912 epidemics were described in Chicago, Boston and Baltimore. The Boston epidemic was traced to milk. Attempts were made to find a similar source of infection to account for the Chicago and Baltimore outbreaks. It was a strange coincidence that during this same period throughout the Middle West there were small outbreaks of septic throat infections, followed by severe complications or sequelae such as general peritonitis, septicemia, arthritis, pericarditis, meningitis and pneumonia. Surely infected milk alone could not explain this. In Ann Arbor, over forty severe cases were observed and the mortality was exceedingly high. Hamberger, mortality was exceedingly high. Hamburger, placed the blame on the streptococcus hemolyticus.

Since 1912, each year during the months of December, January and February, and receding during March, epidemics of acute respiratory infections have swept over this country. Each year the primary symptoms have varied somewhat but the serious and fatal complications have uniformly fallen into a group of diseases caused by the streptococcus.

From 1912 to 1915 these outbreaks were described as septic sore throats, the naso-pharyngeal mucosa and tonsils showing the primary changes, but early in December, 1915 and through January, 1916, there occurred throughout the United States, an acute respiratory disease so infectious in nature that within a short period it became pandemic. The health authorities in our largest city reported hundreds of thousands ill at one time and physicians and nurses labored strenuously for two months.

Because of the widespread distribution of this disease, the rapidity of onset, the similarity of symptoms and the whole course of the pandemic, physicians and the laity used the term la grippe or influenza to designate the infection. However, when examined and studied carefully there were some points of difference between this epidmic and the last great pandemic of influenza which occurred in 1889-1900.

All of the great pandemics of influenza began in Asia or the far East and traveled Westward. This epidemic was practically confined

to the middle third of North America. It occurred at a time when thousands traveled to other parts of the country to celebrate the Christmas time. The disease manifested itself almost simultaneously in all parts of this country.

The etiology of the septic sore throats studied in Boston, has been given, namely infected milk from cows with diseased udders. A small short chain, hemolytic streptococcus was found to be the etiologic agent by Hamburger, who studied the Baltimore epidemic; Capps and Davis placed the responsibility upon the same organism. Streptococcal peritonitis and septicemia complicated many of these cases and brought them to a fatal termination. Mather studied sixty-one cases bacteriologically during the height of the 1915-1916 epidemic in Chicago. Nasal discharges and sputum examined revealed a hemolytic streptococcus in forty-six instances. Green producing streptococci, pneumococci and staphylococci were found in a smaller percentage of the cases. In only one instance was the influenza bacillus found. Capps and Moody studying the same epidemic found streptococcus viridans, pneumococcus and a hemolytic streptococcus in nearly all of the cases studied. Williams of the New York Health Department found the streptococcus and pneumococcus in the majority of the fifty cases studied. All of the observers of this influenza like epidemic failed to find the Pfeiffer bacillus, except occasionally.

During the winter of 1913-1914, Dr. Warren Forsythe and the essayist studied one thousand three hundred and forty-two cases of acute pharyngitis and tonsillitis and during the height of the epidemic, bacteriologic examinations of smears and cultures being made from the throats, and grown on blood serum agar. These showed staphylococci predominating and always a few streptococci. After our attention was attracted to a fairly constant finding, our cultural results changed decidedly. We noticed small lymphoid plaques on the post pharyngeal wall. In the center of these plaques vesicles containing clear, serosanguinous fluid or pus were observed. By mopping over these with 50 per cent. grain alcohol and curetting the central lesion lightly we were able to get nearly pure cultures of streptococci from 60 per cent. of the cases.

During the so-called epidemic of la grippe occurring last winter (1915-1916), the septic sore throat was rarely seen. The nasal and bronchial mucous membranes were attacked. The tonsils usually escaped infection and the pharyngeal mucous membrane appeared injected giving a beefy red color. During January, 1916, the University Health Service staff observed one thousand and thirty-eight cases of this epidemic respiratory infection. Mr. Todd, our technical assistant, made a bacteriologic study of the nasal, pharyngeal and bronchial secretions from nearly one hundred cases. His findings will be published later but he has kindly allowed me to mention some of them. The work was begun with the idea of growing the Pfeiffer bacillus.

Pfeiffers' bacillus was found in but few cases. The predominating organisms found in cultures made from the mucopurulent exudate of the infected mucous membranes were pneumococci and various streptococci. One streptococcus form was present in predominating numbers in 80 per cent. of the cases. This was an unusually pleomorphic type as regards its grouping. It was usually seen in the nose and throat as a small diplococcus or even as what seemed to be a very short diplococcus in masses with a few short chains of 4-6 elements and in liquid media developed fairly long chains of 20-30 elements. On fresh human blood agar the colonies always developed a wide zone of hemolysis. This organism, though retaining the stain by Gram's method, showed a distinct Gram neutral tendency when taken directly from the throat or from the primary culture.

This work has been carried on throughout this past winter (1916-17) and the results are extremely interesting.

As a basis for this paper I have taken the Health Service records for the last four years, namely 1913 to 1917. During this time we have observed many acute respiratory infections. Tabulated, the disease observed and treated are as follows:

TABLE I.

	1913-14	1914-15	1915-16	1916-17	Totals
Acute Rhinitis ..	607	796	648	726	2777
Acute Pharyngitis	784	693	600	602	2679
Acute Tonsillitis	558	496	251	295	1600
Acute Laryngitis	166	96	139	209	610
Acute Bronchitis	269	230	135	101	735

In diagnosing and recording these conditions the chief complaint and most active condition were considered in making a diagnosis. For example if a student came in complaining of a severe sore throat and examination revealed an acute follicular tonsillitis, his condition was recorded as tonsillitis, although the examination often revealed a mild pharyngitis and rhinitis.

In considering the rôle played by the strep-

tococcus in these acute respiratory infections, I have taken only those conditions which have been proven to have the streptococcus as their casual agent or which, in our own work, showed culturally the streptococcus as the invading organism.

Septic sore throats are of different types. I have mentioned the superficial form noted during the first year of the Health Service experience. In this type the involvement of lymphoid tissue of the pharynx showing vesicles containing serous or hemorrhage fluid and pustules, was the characteristic finding. This form in our experience, subsides readily but is prone to give middle ear, mastoid and sinus involvement.

By far the most common form is the epidemic streptococcus tonsillitis. This form shows injections and swelling of the tonsil and surrounding tissues with a small amount of greyish exudate from the tonsillar crypts and at times a distinct membrane covering the tonsil in whole or in part and extending on to the pillars and pharyngeal wall. This form of streptococcic infection gives marked constitutional disturbances and is, I believe, the most dangerous type, frequently being followed by arthritis, peritonitis and septicemia.

A third type of streptococcus throat infection is the acute suppurative peritonsillitis. We have observed only sixty-one cases of this type. In all of these in addition to the browny induration and swelling about and above the tonsil there has been marked edema of the soft palate and uvula. Incision gives a seropurulent discharge but rarely is there a large abscess unless the streptococcus and staphylococcus are associated.

A fourth type seen rarely is the streptococcus cellulitis of the neck. It is usually unilateral but may be bilateral. The lymph glands and structural tissues of the neck become fused in a firm indurated mass which shows but little tendency to soften. Laryngeal complications are common with this type of infection and in two of our cases the thyroid became involved.

In studying the complications and sequelae of acute respiratory infections I have used the figures given in Table I in computing percentages.

Otitis Media.—The total number of cases of acute rhinitis, pharyngitis and tonsillitis treated during four years was seven thousand and fifty-six. Of this number one hundred and seventy-two cases developed a middle ear infection or a percentage of 2.4. Capps and Miller reported six cases of otitis media complicating one hundred and seventy-three acute tonsillitis cases or a percentage of 3.4. Mastoiditis developed in fourteen and ten of these came to operation. Two of these cases were found to have sinus thrombosis. As a typical example of the otitis complications following a streptococcus throat infection I will briefly relate the following case history.

P. E., age 19, student, presented himself at the Health Service November 10, 1914, complaining of sore throat. A superficial form of streptococcus pharyngitis was found. He was given salol and phenacetin, a cathartic, advised to gargle hot saline solution and to return for observation. Two days later he returned with otitis media on the right side. He was referred to the Department of Otolaryngology. A paracentesis was made, bloody purulent discharge being released. November 15, 1916, mastoid involvement was detected. Temperature 101.2°, leucocytes 18,250. November 18, operation by Doctors Canfield and Lillie. Complete mastoid operation, ablation of sigmoid sinus and ligation of jugular vein. Patient discharged December 12, 1916, in excellent condition.

There have been no fatalities from the otitis complications.

The frequency of bacteremias in acute tonsil and pharyngeal lymphoid infections has never been worked out in a satisfactory manner. Most observers agree that the frequency is great. The tonsil is considered the usual portal of entry into the blood stream. Once having gained entrance, Elsner says, "there is always danger of septic deposits in organs which present changed or diseased surfaces to the blood or lymph stream." Rosenow called attention to the frequency of involvement of the surrounding structures of the joint following streptococcus throat infections.

Arthritis and Peri-arthritis.—In our series of sixteen hundred cases of tonsillitis, thirty-four or 2.1 per cent. developed joint complications involving most frequently the ankles and elbows. Elsner states that in epidemic tonsillitis, arthritis complicates 10 per cent. of the cases and occasionally leads to suppuration. This percentage is higher than in our series covering four years, but in the last two weeks we have observed five cases showing joint involvement. Three cases occurred in patients having a streptococcus tonsillitis associated with a scarlet rash. Two of these cases proved fatal. Acute polyarthritis was observed in twelve of the thirty-four cases.

It has been stated that acute tonsillitis is coincident with the arthritides in from 70 to 80 per cent. Our experience has firmly fixed

in our minds the idea that acute flareups of chronic tonsillitis usually preceded the arthritis involvement. The index cards of most of our cases of arthritis are similar to this one:

E. J. O. Lit. 17 318
Nov. 22-13—Pityriasis Rosea-Referred to Dermatology.
March 23-14—Acute tonsillitis and pharyngitis.
Oct. 27-14—Acute tonsillitis—Referred to otolaryngology. Advised to have tonsils removed.
Nov. 18-14—Acute tonsillitis.
Dec. 16-15—Acute tonsillitis.
Dec. 19-15—Acute tonsillitis and frontal sinusitis.
March 3-16—Acute tonsillitis and polyarthritis. Taken to hospital. Tonsils removed after three weeks. Completely recovered.
March 15-17—Stomatitis.

We have classified as rheumatism those cases having stiff and painful joints, but not definite joint lesions following acute throat infection. Torticollis, lumbago and myositis have been grouped in this class. The following table shows the frequency of these sequelae:

TABLE II.

Rheumatoid Complications.	Number of Cases
Mild arthritis symptoms	120
Torticollis	42
Lumbago	103
Myositis	196

The frequency with which recurring attacks of these rheumatoid symptoms in students having chronic tonsillitis occur, and the absolute disappearance after tonsillectomy, strengthens our belief that these are manifestations of streptococcic activity in the joints and muscular system. The researches of Poynton and Paine also Rosenow's work prove this experimentally in animals.

Before leaving the discussion of arthritides, I wish to sketch briefly the histories of four students seen during the month of March.

CASE 1. N. H. Postgraduate student, age 28, was taken ill March 2, 1917, with a mild pharyngitis and rhinitis. In spite of the usual treatment the temperature rose each afternoon to 102 or 103°. On the fifth day of his illness the left knee became swollen and painful presenting a typical picture of a peri-arthritis. No other joints have become involved and although confined to his bed, he is convalescing nicely.

CASE 2. P. W., age 19. Freshman student. Was seen in his room on Tuesday, March 6, 1917. He complained of a sore throat. There was a small amount of greyish exudate on the tonsils. This tonsillitis cleared up in three days but on Saturday March 9, 1917, he complained of a painful right ankle joint. A diagnosis of acute articular rheumatism was made and the young man was taken to the University Hospital. The following day, at his mother's request this student was transferred to a private hospital. At this time his left elbow showed a marked peri-arthritis and lymphangitis. His temperature was 101.6°, pulse 100 and general condition fairly good. The leucocyte count was 12800. At 3 a. m. Monday morning, March 12, he became extremely irritable, restless and irrational. Within three hours his right elbow became involved, his temperature rose to 105.2° with pulse feeble and extremely rapid. He died at 1:30 p. m. Two hours before death blood cultures were taken. These gave a growth of hemolytic streptococci two days later.

CASE 3. Mr. W. Student seen March 4 by Dr. Waldron. He was suffering from a severe sore throat. The next morning a diagnosis of scarlet fever was made. This young man was seriously ill while in his room and showed numerous casts and but little albumin before being moved to the contagious hospital which was done as soon as a vacant bed could be secured. His course while in the contagious hospital was practically the same as in Case 2. A severe peri-arthritis and lymphangitis of the right elbow and arm developed and he died of a septicemia.

CASE 4. P. P., age 23, Senior literary student was taken ill March 10, 1917, with a severe tonsillitis. Two days later he developed a scarlatinaform eruption and was isolated in his fraternity house. As soon as a bed could be provided in the contagious hospital he was moved. On March 21 he developed a severe laryngitis, had difficulty in breathing and on March 24 showed evidence of involvement of the thyroid gland. On March 26 the right olecranon bursa became involved and was opened on the evening of the same day, about one teaspoonful of sero purulent material being evacuated. Since that time the temperature has fallen and there is a tendency for the septic process to localize in the joint and thyroid. Discharged April 12, 1917.

Heart.—Endocarditis is reported as a complication of arthritis in 34.3 per cent. in children (Pribam). In our series of thirty-four arthritis cases eight or 23 per cent. developed cardiac complications. Following throat infections without arthritic complications the following lesions have been diagnosed:

TABLE III.

	Number of Cases
Mitral insufficiency	53
Aortic insufficiency	11
Mitral stenosis	4
Aortic stenosis	4

The frequency of valvular lesions in young adults is amazing. About 4 per cent. are found upon routine physical examination to have evidence of cardiac damage and fully 80 per cent. of these give a history of attacks of tonsillitis, arthritis or scarlet fever.

Within the last month, two students have developed severe cardiac complications. The first developed a severe myocarditis five days after his tonsillar infection began. The second developed a pericarditis within six days of the onset of tonsillitis.

Brain and nervous system complications, such as meningitis and neuritis have not been met in our series, however, delirium and extreme alertness and irritability have been observed in many cases during the acute stage. In four fatal septicemias this marked irritability has been the first indication of invasion of the blood stream. I consider it a very valuable prognostic sign.

Pulmonary complications have been few; only seven cases of bronchopneumonia developed after these acute respiratory infections, unless we include several hundred cases of severe bronchitis occurring during the epidemic of 1915-16, which showed no definite involvement but had bloody sputum, containing streptococci and pneumococci. Two students had pulmonary hemorrhages during this epidemic. Tubercle bacilli were found in the hemorrhagic sputum although subsequent physical examination and X-ray examination failed to disclose the area involved.

In all streptococcic infections the kidneys take the major part in eliminating the toxins and recently pathologists have come to believe that the streptococcus in the blood stream actually passes through the kidney and is excreted in the urine.

Dr. Drury of the Health Service Staff is studying the frequency of kidney involvement following tonsillitis.

It is to be expected that the kidneys would be damaged frequently by the toxins and organisms excreted. However, the very common finding of albuminuria following tonsillitis, does not mean nephritis. This albuminuria is a very transient finding but should always lead to repeated examinations.

In our series of 1600 cases of tonsillitis thirty cases of nephritis were observed or 1.8 per cent. Two of this number were of the acute hemorrhagic type. Acute parenchymatous nephritis was the more common.

Two students died from appendicitis and peritonitis of streptococcic origin. These fatalities have made me extremely cautious in advising an appendectomy where an attack occurs during an acute throat infection.

I realize that this paper deals more with the statistical data than with symptoms, treatment and results; so that conclusions of value to the practitioner are not apparent. However, I have tried to emphasize the importance of supposedly trivial respiratory infections.

A few impressions drawn from our observations might be fitting.

1. All sore throats are potentially dangerous to health and life.
2. Streptococcic bacteremias are apparently frequent incidents in respiratory infections.
3. The tonsils and lymphoid tissues are the usual portals of entry for pathogenic streptococci.
4. Damaged or diseased surfaces are most often attacked by these blood invaders.
5. Absolute rest, stimulative measures and aiding of elimination are of primary importance in treating the acute conditions.
6. Possibly too conservative an attitude has been taken in the past about incising localized streptococcic foci.
7. Removal of diseased portals of entry is the best preventive measure.
8. Alertness and irritability, denoting central nervous system irritation due to toxins are grave prognostic signs.
9. Careful observation of the kidney function during these diseases is of great importance.

DISCUSSION.

DR. R. BISHOP CANFIELD: I think this is a very admirable and very timely paper. As Dr. Cummings read it so many things occurred to me to say that I soon found that it would be quite useless for me to attempt a comprehensive discussion of it.

I have had the opportunity of seeing some of these patients with Dr. Cummings and have talked over the situation with him many times. I have for some years been firmly of the opinion that the majority of infectious diseases are contracted through the throat, that is, through the lymphoid tissue of the throat, and I have yet to be shown that I am wrong in thinking that all infectious diseases are contracted through the lymphoid tissue. Naturally the throat, the buccal cavity, the nose and the nasopharynx, composing the cavity most intimately connected with the outside world, are the cavities through which the infection usually enters the body. If we include not only the upper end of the respiratory tract, but the orbital tissue, the lymphoid tissue of the urethra and rectum and vagina, we find difficulty in imagining another portal of entrance except through accidental wounds of the skin. The more I think of these epidemics of throat infections, the more I am convinced that in the pathologic condition of the nose and throat we have the pre-

disposing factor in infection. What the character of the infection will be depends to a considerable extent upon the strain of bacteria then prevalent in the community, the resistance of the patient, and the pathologic condition in his nose and throat.

In certain of these epidemics bacteriologists find in a great majority of cases bacteria of very similar characteristics. In one such epidemic the complications are very similar. In another complications of a different kind are found in the majority of cases. This is borne out very conclusively by Dr. Cummings in a large series of cases. This epidemic, for instance, of so-called scarlet fever which is prevalent at the present time, bears out this statement. I am strongly of the opinion that there are many mistakes of diagnosis being made. I think that many of these cases of scarlet fever are due to the streptococcus which in this epidemic is producing a rash of the character which we usually ascribe to scarlet fever. So many authors have stated that scarlet fever presented many different characteristics in different epidemics and in different patients, going so far as to say that scarlet fever may be present without a rash, without sore throat, without temperature, and without any of the symptoms that we usually ascribe to scarlet fever. In other words, they are describing a condition which is diagnosed according to the characteristics of the epidemic then present. For instance in one of the cases which Dr. Cummings mentioned, the patient had a streptococcic throat and a septic rash, fever and sickness. Naturally his case was diagnosed as scarlet fever. It would have been a mistake not to have so diagnosed and treated him, but I think it becomes a grave question as to whether such a patient should be isolated with patients who are known to have scarlet fever. Although I didn't see that case early, I am very skeptical about the diagnosis of scarlet fever. I am skeptical also of the diagnosis upon another patient of the four cases which were seen this month. I think it is altogether doubtful if a scarlet fever patient has a sore throat and then a septic elbow. I think such a patient has a streptococcic throat, a septic throat with an embolic focus in the elbow.

Dr. Cummings mentioned several types of septic sore throat. It seems to me they might be divided into throats with, first, edema as the chief characteristic, second, one in which infiltration is the chief characteristic; third, one in which the throat presents the appearance of tonsillitis; and finally, one in which the symptoms are those of a pharyngitis or a laryngitis.

Now as to which of these classes of cases is the more dangerous, there may be some room for discussion because the complications from these four classes seem to differ. For instance, the class of cases in which edema is the most marked. Such patients are very likely to suffocate as a direct result of the edema, the edema spreading down into the larynx and trachea. Such patients usually get well but if this edema increases they die as a direct result of their suffocation. Such patients do not become septic. Death is due to mechanical causes.

The cases in which infiltration is the most marked characteristic get into very bad condition because of the pressure on the trachea. Such cases are Ludwig's angina probably.

Those cases of pharyngitis in which the mucous membrane of the pharynx is glazed and the mucous membrane of the larynx and trachea are both glazed, usually show slight superficial ulceration. The practitioner is liable to say to the patient, "You have an ulcer in the throat." He really does not see an ulcer. Those patients in which the mucous membrane of the soft palate, uvula and pillars disappear in patches are very likely to become septic and they hang on for weeks and even months, and occasionally die.

The cases in which the chief characteristics are those of a tonsillitis are the ones which in my opinion frequently develop joint symptoms which we consider characteristic of tonsillitis and later after the patient is well, develop a heart complication, and frequently kidney complications. Such patients are prone, as Dr. Cummings has said, to repeated attacks during some one of which serious complications arise.

I think that an important prognostic point is whether the patient appears sick. Now in a case of simple tonsillitis the patient has a sore throat, infiltration of the glands of the neck, large red tonsils and a fever of 104-105°, and he feels sick. Such a patient does not impress me as being desperately sick as a rule. He certainly is uncomfortable and is sick, but not desperately sick. But the patient who has a little temperature, a glazed throat with superficial losses of the mucous membrane of the palate or pharynx or false cords of the larynx, looks sick. He has an anxious and apprehensive expression, he is irritable and he shows a positive blood culture and develops a meningismus and occasionally a meningitis. He is really sick, much sicker than is the patient with an edema and infiltration of the larynx who is in danger of losing his life from obstruction.

The treatment of these patients, no matter to what class they belong, certainly is disappointing Usually we are content to treat them symptomatically, as Dr. Cummings has said, with rest in bed and good nursing, an ice collar and some phenacetin, salol or aspirin, and hope they will get well. In many places they have been very free with the use of serums and vaccines, in almost all cases without much success. However, in some cases, two or three of my own, a brilliant success has seemed to follow, if not to be due to the polyvalent serum of Sherman. I have not been very fond of Sherman's productions, but in a few cases their use seems to have been followed immediately by an improvement. There may be some connection between that and the fact that a patient of mine who had his tonsils taken out had fortified himself before the operation with a huge dose of Sherman's serum. He had absolutely no sore throat after his tonsils were taken out. He had a membrane which almost filled his tonsillar fossae after his operation, but no sore throat and no difficulty after his operation.

Dr. Cummings' statement that he hesitated to recommend an appendectomy during a throat infection I think is a very wise statement. The surgical interference of any kind in a streptococcic throat infection is a very dangerous thing. The unnecessary interference with a localized streptococcic infection is more dangerous than we know anything about. A very slight incision in a little furuncle at the tip of the nose caused the death of Dr. Deckman of the Mayo Clinic. That may be due to the fact

that there is a very intimate relationship between the lymphatics of the nose and upper respiratory tract with the lymphatics of the base of the brain.

I have observed a very interesting relationship between infections of the throat and infections of the appendix. For instance, a patient who had had a chronic appendix with attacks repeated at more or less regular intervals for quite a few years had her tonsils taken out and now for a couple of years has not had an attack of appendicitis, depending upon the pathologic condition of the appendix. The interesting work which Rosenau has done on the throat streptococcus and the streptococcus found in the gall bladder and appendix are interesting. I honestly believe that the more we think about it the more we shall be certain of the statement that it is through the buccal cavity and nasal mucous membrane that most of the infections enter the body.

DR. WM. BLAIR: Mr. President: I was very much interested in the paper of Dr. Cummings and also in the very able discussion by Dr. Canfield. There is a phase of the question concerning the relationship of the practicing physician to his patients during the time of these particularly virulent infections of streptococcus that perhaps needs a moment's discussion. Something has been said by both the gentlemen about operating on cases of appendicitis during the time of infectious throats. I don't believe that any operation except emergency operations or operations of extreme necessity should be done in any hospital so far as it is possible to avoid it during the time that we are having a great deal of streptococcus infection. It is bad enough to have to do the emergency operations. At a time when the whole country is literally flooded with the streptococcus we should avoid doing anything that gives a chance for entrance of the infection, particularly at a time when the resisting power is lowered following a surgical operation.

Another matter which has appealed to me very strongly is the proper conduct of the obstetrician during the time of the streptococcus stress. The probabilities are that when public health is reduced to a science one or two physicians will handle all such cases in a community and a man going from a scarlet fever to an obstetric case will be considered culpable. On account of a number of confinement cases upon which I had been engaged I have refused to take any scarlet fever cases up to within the last few days during this epidemic, although some of them came among my best families, because I thought my duty was with the confinement cases which I had promised to take care of, and it would not have been fair to take dangerous cases. I believe that the general practitioner who is handling the ordinary run of non-infectious cases as they come along, and particularly some surgical work and obstetric work, will not only be relieved from caring for obstetric casss, but the authorities will provide some one man to do all of the obstetric work, and thus keep the infections isolated.

This present attack of scarlet fever, if we may call it such, is a peculiar one and one which has been widely predicted by reason of the great prevalence of streptococcus trouble which we have been seeing during the past few years, particularly the streptococcic adenitis in children, and the streptococcic forms of tonsillitis and septicemias and erysipelas. All these have been very much on the increase in general practice during the past two years. It is quite rational to believe that following an increase of such troubles that we should have such trouble as we are having now.

Among the cases of streptococcic disease which I have been brought into contact with and which I have turned over to other physicians up to the past ten days not a single case has shown a typical scarlet fever tongue. The eruption has been atypical, some of them have had no fever, some have not desquamated afterwards. The whole arrangement of them seems to be atypical. A large number have started with respiratory troubles such as mild bronchitis, and within a few days this atypical punctiform eruption has appeared, followed by desquamation. When we get this thing properly classified I believe we are going to find that it is just as important from the standpoint of public health to isolate cases as it is to take care of tuberculosis and smallpox and cases of the more severe forms of infection.

DR. FRED R. WALDRON: My observations have been very similar to Dr. Blair's. I don't think any one would pretend to diagnose scarlet fever in these cases. I have not seen a typical throat or a typical tongue. I have seen generally a general adenopathy, and a posterior nasal bloody discharge. In one case there were more casts in the urine than I have ever seen in urine before, with practically no albumin at all. He had the rash when I saw him. These cases are streptococcic cases as far as I can see. I have not seen enough real scarlet fever to say, but the classical description of scarlet fever does not fit any of the patients I have seen. They have an absolutely typical scarlatinal rash but the brother who slept in the bed with one of my patients when he had the most brilliant rash developed no fever. We quarantined them as scarlet fever. I have not seen a typical case of scarlet fever among the entire series. They have been cases of posterior nasal infection, generally adenopathy and scarlatinal rash. The distribution of the rash has been pretty typical. I have not seen a case which I would call typical scarlet fever.

DR. JAMES F. BREAKEY: I should like to express my appreciation of Dr. Cummings' paper. I think it represents a very thorough statistical study which ought to be quite worth while. I suppose I would be guilty of more or less heresy to say in the present day and age that I doubt whether there is such a disease entity as scarlet fever. Not that there wasn't at one time. There is no doubt but what we have evolutionary types of various bacteria and that we have different clinical manifestations at different times during the course of an infection from the same germ. And you can recover both culturally and clinically quite different types of the germ at different times. As has been previously said tonight. I think that there is only one thing for a health officer to do and that is to classify every suspicious case as scarlet fever. However, I think that there will be an improvement upon the system if we abolish diagnosis. I don't see the necessity of naming a child upon the day of its birth. There are a lot of useless laws regarding medical matters. If you recognize that you have an infectious or contagious condition and placard it "Contagious Disease," you are accomplishing quite as much for the public good and you are wasting no time in waiting for a diagnosis. There is absolutely no doubt at all but

what, especially at a time like this, that many of the undoubted streptococcic diseases, which are not scarlet fever, are more of a menace to the public health than many of the so-called cases of scarlet fever. So if we could institute compulsory reports of all acute febrile conditions aside from acute toxemias and have them placarded early and have them quarantined and segregated I think we could accomplish much more than by waiting for a typical erythema or desquamation to make a diagnosis.

As Dr. Canfield has said, I think we do wrong in sending a suspicious case into a contagious discase hospital unless each and every one is absolutely segregated from all others, because cross infections are bound to occur. If you put a patient in there with a bad streptococcus infection and he there develops a new infection, there is considerable personal harm done to the patient without any particular benefit to the public at large. I have not seen many infectious diseases lately, though I have had a considerable experience in suspicious diagnoses. I know in my own family I sent two maids out for the most beautiful scarlatiniform eruptions and the children had been playing with them right along, but they didn't manifest any symptoms of true scarlet fever. One of the twins had a slight erythema eight or ten days afterwards and I placarded the house immediately with a scarlet fever sign in order to avoid criticism. I don't believe that we ever had a case of scarlet fever in the house.

DR. RAYMOND A. CLIFFORD: I would like to ask Dr. Cummings in regard to the new work which has been done on the bacteriology of scarlet fever.

DR. CUMMINGS: I might say that Mallory some years ago claimed to have found the germ of scarlet fever, and just recently there has been a sort of revival of his idea by several workers. They describe a peculiar small diplobacillus. This same diplobacillus can be produced on solid media by planting this hemolytic streptococcus. On beef tea it grows in chains. It is pleomorphic. One man grows it as one form and another man grows it as another form. One says it is a small staphylococcus. Another says it is a diplococcus, and another calls it a diplobacillus. Mallory has produced this diplobacillus as a causal agent of scarlet fever. When they all get together they will find out that they are dealing with the same organism and that is what Mr. Todd is doing in his paper.

DR. HAROLD I. LILLY: I really have nothing to add to what has been said. Dr. Cummings and the other gentlemen have covered the subject very thoroughly.

I would like to add something in regard to what Dr. Blair has mentioned, that is, the occurrence of glandular conditions in children. Fortunately, while I was located in Chicago, I had a great deal to do with children and ran into several epidemics of this gland condition where the patients were very sick. Dr. Baxter of the Children's Memorial Hospital has reported from his private institution-practice some 150 cases where all their grandular conditions have originated from the nasopharynx. If you have noticed, most of the cases have some nasal discharge at the time of the glandular disease. Although they may not have anything appearing in the throat, still you can isolate streptocci from the nasopharynx.

It occurred to me during the discussions and the original paper, that it all has emphasized the importance of the throat infection as Dr. Canfield has said, and the importance must lie in not considering the affections too lightly. Any sore throat is a latent menace to the health of the patient. When the condition in the course of two or three days, does not show the signs of improvement, we must begin to look for complications, for things which would set him back. I was very much surprised in my clinic last year to see people who were living in poor environment develop kidney complications with sore throats, especially in peritonsillar abscesses or quinsy. The patients did not look well, and when you examined the urine you would find a severe nephritis. That impressed me very strongly last winter and I collected a series of twenty cases in which I have statistics. This work has not yet been published.

Another thing which occurred to me was the fact that during these cases of obstruction in the pharynx and larynx due to edema, one must not be too quick to intubate in a laryngitis or too quick to enter the trachea because in these cases very grave damage may be done by the pressure that you may produce by the intubation tube and by opening up a new avenue of infection when the tracheotomy is done. These cases respond about as quickly to other treatment. I had the opportunity of seeing a friend of mine in Chicago come down with a severe throat infection and within eighteen hours he had a severe laryngitis and tracheitis with marked dyspnea. Fortunately he recovered rapidly under steam tent inhalations, and it was very gratifying to see the quick relief from the ice collar and the steam inhalations. Furthermore. the laryngologist is naturally the last man to see these cases, and they are either in grave straits, or are seen for the satisfaction of the patient who wants consultation in a delayed case of convalescence.

I believe that the work that the Health Commissions and school physicians are doing, especially in children in the school examinations in Chicago, is a great work. They are lessening the mortality and the severity of these conditions by not allowing patients to come back to school within a certain time. They have two or three different types of quarantine which they designate A, B, C and D. The school authorities can keep any child out of school with any sort of sore throat until he is sufficiently convalescent.

I might add that I was associated indirectly with the work that Dr. Capps of the Billings staff did in Chicago last winter. The patients were thoroughly worked over. Nothing was left undone in the work on these cases and they afford a very authentic report. Dr. Capps is a very thorough man and a man of very high ideals.

In regard to any medicinal treatment, I don't know what the action of salol and phenacetin is on the throat, but I know that the ward cases which came into my clinic last year were kept under observation with an ice collar and very frequent hot gargles. There was no routine medicinal treatment. I think the hot saline gargle is as efficient as anything we may do in throat infections. I don't believe a gargle is any good without heat. The hot gargle relieves the tension and has the mechanical effect of cleansing the mucous membrane. All lymphoid tissue is more or less cryptic and there is a ten-

dency for the material to collect within the crypts. This material is forced out of the crypts and the mechanical cleansing I believe is of a great benefit.

DR. FRED R. WALDRON: Dr. Lillie brought to my mind the kidney complications. I have only seen albumin in one case that we have had. It has happened that every case of idiopathic Brights that I have ever seen has been preceded by tonsillitis, and it is generally a tonsillitis which has not been seen by a physician at all, a very light tonsillitis.

DR. R. BISHOP CANFIELD: I believe that every case of disease, aside from the purely surgical sicknesses, is preceded by a sore throat. All the cases of pneumonia are preceded by sore throat. An acute sore throat precedes bronchitis, acute nephritis, acute gall bladder cases, and all acute conditions, even typhoid. I have an idea that the infection in typhoid fever might very well make its entrance through the lymphoid tissue of the throat and reach the glandular tissues of the neck, passing down through the chain of lymphatics that passes through the diaphragm and reaches the lymphatics of the peritoneal cavity. We don't know much about what happens during the two weeks of incubation in typhoid fever. Autopsies show that the oldest pathologic changes in typhoid fever are not in the Peyer's patches but in the lymphoid structures of the mesentery which are in fairly direct communication with the lymphoid tissues of the neck.

DR. FRED R. WALDRON: Isn't there a typhoid septicemia preceding the symptoms?

DR. R. BISHOP CANFIELD: Yes, there is an ambulatory type. The bowel becomes infected secondarily from the lymphoid tissues of the mesentery. I don't think it is going too far to say that the patient becomes sick not as a result of drinking typhoid water which passes into his stomach, because the chances are very much in favor of the typhoid bacillus being destroyed in the stomach, but it is quite possible that this is a lymphoid infection. I have been trying my best to have an opportunity to take out some cervical glands in a typhoid fever case to study this question. But, of course, it probably doesn't make any difference to the patient how he gets the disease, after he has it.

DR. LILLY: I might add that during the recent epidemic of anterior poliomyelitis in Chicago a review of the patients at the Chicago Hospital shows that the tonsillectomized patients had very light attacks, while the cases of bad tonsils had the worst attacks.

DR. R. BISHOP CANFIELD: In the epidemic here of two years ago, only one of the patients had had his tonsils taken out.

DR. JOHN A. WESSINGER: We are getting into deep water in this discussion. But there is a large grain of truth in what Dr. Canfield says, if you make close observations of a large series of cases. I am coming to the belief that a great deal of the diseases which the human flesh is heir to enters through the lymphoid tissue. In our last typhoid epidemic in many cases the incubation period was two months. I believe that a person can become infected with typhoid fever and be almost immune so that it takes a long time for the bacilli to grow.

The present condition among us, undoubtedly, in my opinion, enters through the throat, even though you don't get a sore throat always. It is not always necessary. We are having atypical cases of this condition, but from a public health viewpoint I have to handle it as scarlet fever. You see case after case that has no temperature, very little or no eruption, and yet that patient desquamates from head to foot. Then you see another series where the patient comes down with a sore throat and high temperature and lobster skin without any desquamation whatever. Such things are difficult to explain when we hold ourselves to the classical scarlet fever. I am always afraid of scarlet fever because we don't know where we are with it. We have epidemics in which nearly every case is fatal. Then we have an epidemic with no fatalities. This has been the battle of Dr. Cummings' life and of my life. He has written an admirable paper and we are agreed upon these points and we must handle it from a public health viewpoint at the present time. As Dr. Waldron said, both of us agreed that a certain case was not scarlet fever, but I put a scarlet fever sign on the house.

Dr. Breakey's idea is a good one about a placard on the house stating, "Contagious Disease Within." But if I did it, the people would bother me to death asking about it and I wouldn't get any rest at all until it was diagnosed. However, I believe that is the safe and scientific thing to do.

DR. JAMES F. BREAKEY: Regarding the contagious disease sign, if you are called to placard a case with a scarlet fever sign and the case is pretty well along in its course and the sign comes down in ten days, the next person who has a scarlet fever sign up and has to have it up for six weeks wants to know why he can not get out of quarantine as quickly as the other fellow did, whereas if you say simply, "Contagious Disease" no such difficulty can arise.

DR. JOHN A. WESSINGER: The State Board of Health demands that we keep the minimum quarantine of thirty-five days in scarlet fever cases. I have had several fights with the Board about that. I don't see any reason for keeping a sign up after the patient has completely recovered from the disease, and I have tried to be fair and sensible about the matter and let patients out as soon as the danger has passed. There is no sense in having a definite period of quarantine for a case of any disease anyway, especially scarlet fever where the cases vary so in nature. Now I write under the case in my report to Lansing, "Very mild cases," and get away with it without any controversy.

DR. RAYMOND A. CLIFFORD: This discussion has brought out a great many interesting points. It has been mentioned here tonight that something else is necessary to decide the infection, and that is the resistance of the patient. As regards the general practitioner, I believe that we shall always have scarlet fever or its equivalent. But the general practitioner in relation to the people that he meets and knows intimately has a work he may perform and do the community more good than in just fighting disease when it is present and that is to teach the patient how to keep their elimination active. I believe that if every individual knew about these functions that the infections would have very much less material to get hold of, and when you are talking about

prevention, I believe that is the foundation for all of it.

DR. ROY A. BARLOW: I don't feel that I am in position to add to the discussion. I was fortunate in seeing two of the four cases cited by Dr. Cummings. They were streptococcic infections and it was extremely interesting to note their rapidity and virulence. The man with the infected elbow, who later died, developed an acute ear during the night. I saw him the day following and there was sufficient drainage. It was impossible to see how much destruction was present at that time, but in twenty-four hours the entire tympanic membrane had been eroded leaving nothing but a thin shell of the membrane around the annulus. This happened within forty-eight hours of his first pain in the ear. That was an extremely instructive thing, the rapidity of the infection in that case.

It has been worked out by Wright and Smith of New York that the lymphatics of the neck empty rather freely into the thoracic duct and perhaps that will throw some light upon the fact that we get the tonsillitis, the infection entering the blood stream and then is carried to the different foci.

DR. G. M. HULL: I didn't come here to talk. Dr. Cummings must know that I was greatly interested in his paper or I would not have come out this kind of a night to hear it. I think that any one who has been through the amount of sickness of this kind which we have had would certainly be interested in it. No one has said so far what they do for it. I am situated so that I don't have a pathologist at my elbow. I have to take the cases and do the best I can. I have been listening for somebody to tell me what they have been doing with them. Some of these people might like to know what an average country doctor does for these cases. I don't believe there are any two cases of the disease which are alike. Some are not sick, others are sick from the start. I don't think that you can have a routine line of treatment for them. Mine runs about the same way. I start in with salol and phenacetin. Speaking of rheumatic arthritis, all this winter about as soon as I have gotten the fever broken I pushed the salicylates. I have not had very many cases of rheumatic arthritis. They get ten grains of salicylates as soon as I can give it to them. Then I give them quinine, iron and strychnine, open up the bowels, and give them all the water they can possibly drink. I would like to hear the rest of you tell what you have been doing. We let the cases of otitis media burst. I haven't had many cases of mastoid abscess. I don't think I have had a mastoid abscess all winter long and I have had a lot of gathered ears. I use argyrol, or iodine and glycerine to paint the throats as a local antiseptic measure.

DR. R. BISHOP CANFIELD: During the epidemic of throat infection which we had in the Hospital last winter, all the nurses wanted to come to the Otology Department to be treated and get well. They weren't satisfied with the treatment that they were getting on the Medical side. This made Dr. Schmidt feel slighted and he asked me what I was giving and I said, "Salol and phenacetin." He said that was what he was giving. I give phenacetin to make them feel good, but the salol is to improve their condition. I give five grains of phenacetin and five to ten grains of salol every two hours until six doses have been taken. Then I stop the phenacetin but I keep up the salol. They get well in three days. On the Medical Service they were giving them equal amounts of phenacetin and salol and it took them three weeks to get well.

DR. WM. BLAIR: I have been giving quinine along with the phenacetin, eight grains of phenacetin and one grain of quinine.

DR. S. M. YUTZY: I should like to ask Dr. Cummings if he was able to see any difference in the streptococcus in the different classes of sore throats which he had. In the epidemic in Chicago many years ago Davis said that he could differentiate a particular streptococcus.

DR. HOWARD H. CUMMINGS: We were not able to look into a throat and say, "This is a streptococcus mucosus throat and this is a hemolytic streptococcus throat." In the last three years we have found this hemolytic streptococcus in the different forms in 80 to 90 per cent. of the cases. Every once in a while we get viridans which produce a little green pigment. We sometimes get streptococcus mucosus, but always in with it we get the smaller hemolytic streptococcus, and I believe that is the organism which has been doing the work in the complications. I don't know that we have ever demonstrated viridans in any chronic case.

DR. YUTZY: Erysipelas was mentioned following tonsillitis. I have a case who had quite a severe infection of the nose about a week before the erysipelas started and with no sore throat so far as I could make out. He got well from his nose infection and about a week after that he was taken with a severe attack of facial erysipelas. I don't know whether there was any connection between the infection of the nose and the erysipelas. It followed so close that it seems that there might have been some relation.

DR. MAX PEET: I was interested in one case which Dr. Cummings had. The nurse said that the boy rested on the elbow which became later infected. It became sore and tender and it is in that elbow where the streptococcus started in. This was a purely streptococcus infection of olecranon bursa.

Last Saturday I operated upon a baby with an enormous streptococcus abscess on both sides of the spine. It didn't pass across the spine in any way whatever. I could not with a probe make out where it got down. I should say that this child had a retroperitoneal abscess which perforated under the latissimus dorsi on both sides of the spinal column. The whole family had had sore throats. The child had it last. The mother said an abscess burst in the throat. As a result the baby got this big streptococcic abscess.

DR. NELLIS B. FOSTER: This paper of Dr. Cummings is most instructive. It calls attention to some of the little things which amount to large things. There really is a basis for preventive medicine and that is what we are all striving for at the present time. The importance of these so-called minor infections has not, I think, been realized until the last two or three years. It has been borne upon me in studying rheumatic fever, the almost invariability with which one gets a history of tonsillitis if one takes the trouble to inquire into it carefully. As Dr. Cummings has correctly said, these things

are regarded by the laity as of minor importance. In a great majority of cases they don't result seriously. So when an individual has a sore throat and gets over it, the complication which arises in the next month perhaps, seems a new disease. The two occurrences are not associated. The same is also true of all other complications which Dr. Cummings has mentioned, notably nephritis. We have known for a long time that acute nephritis following tonsillitis is relatively a common thing, and yet it has taken years to bear it in upon us that the subacute or early chronic nephritis is very frequently associated with a focus of infection somewhere in the respiratory tract.

I do not think I need to discuss this matter of respiratory infections further excepting to commend Dr. Cummings' work upon the subject. I think it is most useful. It is the kind of work that we must fall back upon ultimately for active measures in preventive medicine.

DR. HOWARD H. CUMMINGS: If I should tell you just how I feel about these acute infections and their relations pathologically in the nose and throat, I am sure you would say I am in league with Dr. Canfield. The longer I stay in the Health Service work the more I am impressed with the pathology of the nose and throat. I cannot agree with him that all the infectious diseases get in through this way, but when he says all the lymphatic channels, I think he has covered the mode of entrance of all the infectious diseases.

He made mention of the relation of tonsillitis to appendicitis. If one of your patients gets an attack of appendicitis following closely on an acute tonsillitis, it is my opinion that that patient should be watched very carefully and not operated unless absolutely necessary. I have only had two fatal cases. We have about forty students operated each year for appendicitis. These case are in no way related to throat infections. Two cases have occurred within two days after tonsillitis. They have been operated and both died promptly of streptococcus peritonitis, and Dr. Warthin stated that he found streptococci in the serous coating of the appendix.

As to Dr. Blair's remark about the strawberry tongue and the atypical course that these cases run, Dr. Kieffer, who has had a wide experience with scarlet fever, says there is no such thing as a strawberry tongue in scarlet fever. If you have it, it comes late. He says the typical scarlet fever tongue is a pearly gray tongue. Later on the red papillae comes through the gray base, then the strawberry tongue develops. He says not to wait for strawberry tongue to diagnose the condition.

I don't believe that any one can diagnose a streptococcic sore throat with a scarlatiniform rash from a case of scarlet fever. We have to treat these cases as scarlet fever, however, and they must be so handled.

As to placarding for contagious diseases, I would say that the influence on the patient is very marked when you put up a sign reading scarlet fever. If you put up a sign, Measles, or German Measles, you are liable to come back and find that the patient has gone to the movies. If he has scarlet fever he will stay in.

Dr. Lillie has mentioned nephritis and albuminuria in a series of cases which he observed. Dr. Drury of the Health Service staff is working out the frequency of albuminuria in streptococcic cases at the present time. I believe that during the first two or three weeks albumin will be found sometimes following the streptococcic infections. Nephritis comes on from three to five weeks after the streptococcic throat or scarlet fever infection. We are prejudiced about one symptom of nephritis. I have always laughed at backache in nephritis. I believe I have assumed such an attitude because of the newspaper patent medicine advertisement. I have always examined the boy's urine when he would come in with a backache but I thought it was something else. I must say in studying our cases of nephritis that backache is a pretty common symptom. Of course, a lot of it is due to myositis, actual infection of the muscles.

Dr. Hull asked about the treatment. I believe most of us have been doing what he has outlined. In my paper I thought I outlined the treatment of the condition, but if you did nothing more than that, the patient would discharge you. I think rest is the important thing to prevent metastatic processes. I believe that many cases of arthritis would be prevented if patients were not allowed to get up too soon. We have used salol and phenacetin to keep the patient comfortable and we have used salicylates. I believe it is criminal to put highly astringent medication upon an inflamed pharynx or tonsil. All the bad cases I have seen have followed this treatment You are simply sealing up Nature's avenue of escape for the poisons and bacteria. You coat over the follicles of the tonsil, and instead of the material draining out onto the pharynx, the patient is absorbing all the contents and the bacteria go into the blood and lymph streams rather than over the mucosa. The hot saline gargle is best. It is a physicochemical proposition. I use a half teaspoonful to a glass of hot water. That is a little stronger than normal salt solution. The rationale of the thing is that you are putting a hypertonic solution on one side of a membrane and you mechanically attract poisons from the membrane.

Dr. Yutzy has mentioned erysipelas. This is always mentioned as a complication of streptococcic infections. In his case it followed a nose infection. It is not uncommon. I didn't mention that in our complications. Since there are many I omitted. We have had three or four cases of erysipelas. Another thing which we have had is erythema nodosum which has been proven to be a streptococcic infection.

With regard to Dr. Peet's remark about the patient's resting on his right elbow, three of our cases developed arthritis in the right elbow. It is a well known fact that if a boy has had a broken ankle or broken bone, that joint or bone will develop an arthritis or osteomyelitis. Former traumatism offers a place of deposit for these septic organisms.

INDICATIONS AND CONTRAINDICATIONS IN THE TREATMENT OF HARE LIP AND CLEFT PALATE.

ROBERT H. BAKER, M.D.

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Though the subject of the operative treatment of hare lip and cleft palate has been under discussion for some time, there still remain many considerations in the care of these cases which are not yet settled. The best age at which to operate is still a point under discussion, and though this question is in large part settled in the minds of the most experienced workers in this field, it is still undecided by the general practitioners who are first consulted for advice in the treatment of these unfortunate malformations. Just as it is necessary to advise intervention at the proper age, so is it necessary to know the contraindications to successful treatment. Furthermore, should the operator be concerned with the routine treatment in simple and in special cases and complications? To the end that the profession may be reminded of what can be done in these malformations, when and how best accomplished, I offer the following discussion.

In deciding upon the proper age for operation, we find ourselves involved in an old controversy. The earlier workers in this field hesitated in advising any intervention in very young infants. The risk was considered too great, the field of operation too small. A considerable difference of opinion existed, also, as to the proper order of procedure in repairing cleft of the hard and soft palate and hare lip. Some preferred to repair the lip first believing the palate closed considerably after this operation. Others wished to unite the palate first to secure the maximum space for the field of operation. These points have gradually fallen out of the direct line of debate in view of the more important problem of age for surgical intervention and its subsequent risk to the patient.

The believers in operation during early infancy do so on the following grounds: First, these babies are usually very difficult to feed. They nurse poorly if at all at the breast. Some even can not nurse with a bottle. They require special care. They are of weakened vitality, subject to pneumonias, toxemias and malnutrition. As these babies are given a chance to breathe and take nourishment normally, in such proportion do they gain weight and health. In addition to this vital consideration is the ease with which the cartilaginous structure of the maxillae are moulded in early infancy. Lips repaired at this time heal beautifully. There is sufficient exposure for good technic on the part of the operator. There is a minimum of shock due to the incomplete development of the nervous mechanism in the child. Lastly, early repair predisposes to development of normal speech.

The opponents to early operation fear the infant mortality on poorly nourished babies. This argument is weakened in view of the statement that one-half of the children born with extensive clefts of the palate die within a few days after birth. The dangers of postoperative pneumonia is a strong argument. The liability to permanent disfigurement due to too early operation is strongly emphasized. The destruction of tooth buds and repair of clefts in palate and lip when facial contour is so poorly established, leads, they believe to unnecessary facial deformity. Lastly, the speech defects following early operation are believed by some to be greater than when operation is postponed. The logic in this statement is faulty in view of the good muscular development in palates closed early as opposed to the atrophy of disuse in those in which operation has been postponed. Comparative cases must bear witness.

Beyond the questions of when and how to operate we find very little else in the literature. There are, however, certain contraindications to operation which should vitally concern the operator. If he is to gain the best results he must not only bear these in mind but must impress them upon the practitioners from whom he draws his clinic. The hereditary factor as it influences a patient's general health or even his environment must be considered. The patient's own ability at co-operation in the treatment, his intelligence, his personal hygiene—all are to be reckoned with in a successful result. The local condition of the ear, nose and mouth is not emphasized. Among writers on the subject, Brophy has taken most careful pains to call attention to these points. Carmody also makes slight mention of them. Others seem to focus their attention almost solely on operative method.

Another thing of which we find little mention in the literature is the postoperative care. This has been considered mostly as generalities. Practically no attempt is recorded to determine a means of diet and asepsis which would be especially applicable to the conditions met with in hare lip and cleft palate surgery with its diversity of operative methods. Brophy alone

gives detailed description for postoperative care. His chief routine consists in gastric lavage to prevent vomiting and a regular use of boric acid or normal saline sprays. Argyrol and iodine are used to some extent as local applications. Other treatment is largely symptomatic.

In the 66 cases of hare lip and cleft palate treated in the University of Michigan Hospital Clinic in the last fifteen months, the conditions under which treatment was undertaken were most varied. The age variation was one week to thirty-two years. This number includes patients from a wide diversity of social conditions. The physical and mental condition varied accordingly. Among the infants many forms of physical defect, malnutrition and disease were met. Heritosyphilitics and rachitic children, uncared for and ill nourished, were common. Babies from good homes where hygiene and careful nursing prevailed were in the minority. Between the ages of three and twelve nearly the same types were seen with the added factor of speech. Here a troublesome complication frequently arose in those children who from lack of careful training in obedience proved inveterate talkers to the detriment of success. From the nature of the clinic as a state institution and refuge of last resort, a rather large proportion of cases were seen in which more or less unsatisfactory attempts at repair had been tried elsewhere.

The choice of time for operation does not materially differ from that recognized by the majority of oral surgeons today. In cleft of the hard palate, operation is advised as soon as possible after birth. If hare lip exists, repair may be done any time not less than five days following wiring of the hard palate, but preferably in early infancy. Repair of cleft of the soft palate is not attempted before the eighteenth month or before the child would normally begin to talk. This time is chosen to allow the patient to learn phonation as nearly as possible under normal conditions, that is, with a complete palate, and on the other hand to afford the surgeon the better risk of operating on a case old enough to bear well the strain of a general anesthetic. This age also furnishes a much better development of tissue with which to effect a closure of the cleft, than in younger infants. Cases appearing for operation beyond these ages are advised according to their general condition to stand an operation. These rules apply only in uncomplicated cases—cases which lack other marked physical defect and are free from constitutional or local disease.

The preparation of the patient is very simple. A simple enema is given the morning of operation, with the last feeding at six a. m. Atropin suphate, gr. 1/300, is given by hyperdermic just preceding operation, to all babies over three months of age. This preparation seems entirely adequate in clean cases but we have found it advisable in the large majority when the patients entered the Hospital with any suspicion of a coryza, to institute further measures which will be described later. These latter we have come to use almost routinely in all cases.

I do not intend to discuss operative method except in so far as it affects postoperative treatment. Selected horse hair is used exclusively for coaptation sutures as it is productive of less irritation and infection. The local preparation of the field is done by swabbing the palate or lip with tincture of iodine. Argyrol is applied to the suture line before the patient leaves the operating room. Anesthesia is usually obtained by ether with the Fillebrown method. This is necessarily in the hands of an expert with these young patients and a state of analgesia is preferably maintained. This allows of such ready recovery that should excessive hemorrhage or mucous be encountered, the patient can be allowed to swallow rather than aspirate. A constant suction aspirating outfit is invaluable in these cases and saves much worry over aspiration pneumonias as well as saving time for the operator.

The postoperative care consists in a special diet and means for antisepsis in the mouth. In infants, feedings are given every two hours and started within two hours after return from operation. The formula given before operation is modified to a two hour schedule. Feedings are given by sterile rubber bulb. Other patients are on a two hour schedule. All nourishment is liquid and the quantity and caloric requirements are arranged according to the patient's needs. Cuffs are placed over the elbows to prevent the child from getting his fingers into the mouth. The mouth and nose are sprayed twice a day with 20 per cent. argyrol and every two hours with alphazone, after feedings. Spraying is accomplished with an atomizer. The nurse is cautioned not to use swabs or other appliancee in the mouth. This routine is maintained following all hare lip and cleft palate operations. Silver wires in the hard palate remain thirty days. Sutures are left in the soft palate 11-14 days, in the lip 6-10 days. Patients are strictly confined to bed except adult cases and rigid contagious precautions exercised over their

rooms. Fresh air is encouraged. Special nurses have charge of these cases with not to exceed four patients to a nurse.

Such measures as outlined above suffice for an uncomplicated case. But unfortunately such cases are scarcely the rule in oral surgery. Therefore, certain special measures must be used to meet the emergency of complicating conditions. Of course the general physical condition of the patient is taken into account and careful examination is made of heart and lungs. Intestinal conditions are not always so obvious nor so readily met. When patients can be detained in the Hospital several days or more before operation, such conditions can be diagnosed and usually eliminated. The most serious complicating factor to successful cleft palate work, however, comes from local pathology in the ear, nose and throat. And this is too often seen. Interference in the surgical result from these sources is luckily not so common in the earlier operation for cleft of the hard palate and hare lip. Before any operation each patient is carefully examined and if serious complicating pathology is present it is removed first. If not serious, the patient is allowed to leave such treatment of these conditions until a later date. Preparatory to operation upon the soft palate, care in this regard is imperative. First of all, the patient must be observed for the possible "cold" which is so frequently contracted when coming to the Hospital. All patients are referred to the Department of Otolaryngology for examination and treatment if indicated. In the event of operation upon adenoids and tonsils the cleft palate operation is postponed at least three weeks, for complete recovery. Discharging ears often necessitate a longer period of treatment and it is with utmost trepidation that operation is advised in these chronic ear conditions. In the less serious local infections, the patient is put through a rigid course of preparatory treatment. The nose is irrigated every two hours with a preparation of ½ per cent. zinc chloride in saturated boric acid solution. This is also used as a spray in the mouth in the more severe coryzas. Argyrol is used as a spray twice a day in the mouth. Operation is not attempted until the local inflammation has definitely subsided.

Complications may arise in postoperative care. In a small percentage of cases excess tissue slough or infection takes place. In our experience these cases arise from certain definite causes. Occasionally a case comes to operation with some chronic nasal or middle ear infection which is either so slight as to have missed detection or is very resistant to treatment. The percentage of failures is high in this type. Bad teeth in this clinic have proved a rare complication, as would be expected since the growing tendency to early operation leaves but few adult cases where such conditions are prevalent. In the course of routine examination this must always be taken into account. Postoperative pneumonia may lead to sufficient infection in the nasopharynx to interfere with perfect union. Old scar tissue from former operation is not in itself a serious complication but as it is so often accompanied by local infectious conditions, it may prove disastrous. The very existence of scar tissue is too often a sign of previous operative failure in the presence of infection. Therefore these cases must be most carefully examined before operation. When sutures have loosened they should be removed. No attempt should be made to repair the gap in the presence of infection. Vomiting during the first day or two following operation undoubtedly may cause serious strain upon sutures, but it is a complication very rarely encountered in this clinic. No attempt at routine gastric lavage is made to avoid this sequela.

In the event of postoperative complications arising in the ear, nose or throat, many remedies may be tried. Whereas in this clinic sterile water was formerly used as a spray or irrigation, we have now passed through the stage of normal saline, boric acid solution, hypertonic saline, carbolic and borax solution, and now find zinc chloride in ½ per cent. solution in suitable medium, controls secretions when they become particularly thick and ropy. In extreme cases this is used every two hours as a nasal douche.

One other complication which should not be omitted is that of the persistent talker. The patient must be encouraged and persuaded by every means possible to refrain from talking unnecessarily. We have never resorted to hypnotics to produce the requisite quiet.

Our advice to patients with partial failure of union is to carry out a routine treatment of the cleft with silver nitrate and wait six months before further operation is considered. In complete failures from infective causes, six months is the minimum time to elapse before a second operation, other treatment to be carried out in the interval as indicated.

A summary of cases since Oct., 1915, is as follows:

Total number of cases of cleft palate only	28
Total number of cases of hare lip and cleft palate	33
Total number of cases of hare lip only	5
Total	66

	Successes	Partial Failures	Total Failures
Under 3 Mos.....	4	1	0
Age 3-18 Mos.	13	1	0
18 Mos., 3 Yrs.	15	5	1
4-7 yrs.	5	2	2
8-18 yrs.	9	3	1
Over 18 yrs.	3	1	0
Total	49	13	4
Ear, Nose: Treated..	12	5	2
and Throat: not Pathology: Treated	3	6	1
Total	15	11	3
Other Complications:			
Pneumonia and bronchitis	3	1	0
Talkers	0	0	1
Previous operation.	3	4	1
Gastro-intestinal ...	1	0	0
Persistent thymus ..	0	0	1
Syphilis, etc.	2	1	0
Total	9	6	3

Certain significant facts appear from this summary. In 66 cases there were no deaths. Of the 13 cases in which success was not complete, 11 had ear, nose or throat pathology. Twenty-nine of 66 cases were so affected, only 18 of all other complications. Facts the table does not show are that two failures were on the same patient, that of four partial failures on patients previously operated all had nose or ear infections. One case accounting for two failures was both an inveterate talker and a carrier of chronic ear infection. One failure had both an enlarged thymus and chronic otitis media. Partial failures include everything from a sloughed suture in the ala of the nose, or a hole in the soft palate the diameter of a match to a considerable cleft remaining in the soft palate. These results were recorded at the time of discharge in each case. The age of the patient is not an important factor in determining the immediate surgical result in complicated cases except in relation to persistent talkers. Careful early examination and treatment of probable complications are essential to the success of cleft palate operations. Return cases must have special care and treatment before operation is advised. Time spent in this direction is most valuable to the patient.

The results obtained in this clinic though not altogether satisfactory, point definitely to certain growing truths in the care of these malformations. Early operation following closely the Brophy method, has been in every case productive of good results. The immediate health of the patient is remarkably improved. Observations upon cases operated upon by these methods after sufficient lapse of time have shown very satisfactory functional results.

Routine general and local preparation of the patient seems indicated in all these cases over an extended period, judging from the large proportion of complicated cases and the results in these in which such care was not extended. Most careful precautions are necessary in isolating these cases from exposure to the usual hospital infections and contagion. Lastly the nursing standard must be maintained if uniform satisfactory results are to follow. The ideal, not always attained, is a graduate nurse of special training and capability to understand the particular problem in surgical care that is required in this type of case, one who is always interested in the result, and who may be relied upon absolutely to obey orders but who is sufficiently keen to notice any need for individual changes in routine treatment.

I wish to call attention especially to the use of antiseptic sprays and douches as applied especially to cleft palates complicated by profuse nasal discharge. There seems little doubt from our results and those of others that simple mechanical cleansing of the parts is sufficient in clean cases. But the problem changes when during postoperative treatment or before, the patient develops a profuse mucous or mucopurulent discharge. This question concerns the rhinologist equally and many remedies have been offered. In my experience argyrol used as a spray in the mouth or nose is probably no more antiseptic than normal saline. When it is desirable to coat over a clean dry wound with a mild antiseptic, argyrol may find a place. For use in the mouth where secretions are constantly washing it away, little benefit can be expected. In those cases of mouth breathers where its use is attended by drying and caking it seems equally ineffective and even dangerous in coating over a surface which is almost surely infected. The use of hypertonic salt solution in excessive discharge seems to provoke a freer, thinner mucus. When the mucus becomes particularly thick and stringy, saline is not sufficient. We have no reason to expect better results from boric acid solution. This is so slightly antiseptic under these circumstances that it offers little advantage over saline. We have not employed alcohol and boric solution

as recommended by Brophy. Of the more recently advocated antiseptics, only alphazone has been tried, and with considerable success if used in strong enough solution to exhibit a definite astringent action. As a solvent of mucus it is moderately effective. At the present time the most efficacious preparation in our hands has been zinc chloride in ½ per cent. strength. This seems to combine with its definite antiseptic properties sufficient protein precipitant action to relieve the most troublesome nasal discharge. We attribute its action not to solvent power but to astringent effect. This involves protein precipitation in the mucopurulent discharge and excites sufficient local irritation to cause a free thin mucus which readily exhausts the glands. The end result is a clean relatively dry nose and pharynx.

SUMMARY AND CONCLUSIONS.

1. Not sufficient thought has been given to the preparation for operation and the postoperative care in simple and complicated hare lip and cleft palate cases.

2. The profession should encourage early operation for the best result as to mortality and functional result.

3. The operator must insist on complete and careful preoperative examination of the patient.

   (a) To eliminate systemic disease.

   (b) To eliminate local pathology in the ear, nose and throat. (Over one-third of all cases in this series had this complication).

4. Age is not an important factor in the surgical result.

5. Success depends largely on the elimination of complications.

6. A period of observation before operation is desirable and necessary to good results.

7. A routine pre and postoperative treatment is imperative. This may be varied to meet complications with success.

8. Satisfactory means of antisepsis should be determined. Antiseptic astringent solutions have proved quite satisfactory.

9. The postoperative care by nurse and physician in charge plays a large part in the final result.

10. Partial and complete failures at repair require a prolonged period before a second attempt at operation.

I wish to acknowledge my indebtedness to Dr. C. J. Lyons for the privilege and encouragement of research in the material from his clinic.

BIBLIOGRAPHY.

Brophy: *Oral Surgery*, 1915.
Lane: Cleft Palate and Hare Lip. 1905. Modern Treatment of Cleft Palate, *Lancet*, 1908, 1.
Owen: *Medical Monographic Series*, 1904. *Keen's Surgery*, 1908.
Mason: Hare Lip and Cleft Palate, 1877.
Murray: Hare Lip and Cleft Palate, 1902.
Baldwin: Laryngoscope, 1907, XVII.
Barnhill: Repair of Hare Lip and Cleft Palate, *Ibid.*, XVIII, 1908.
Carmody: *Southern Med. Jour.*, 1916, IX. *Col. Medicine*, 1908. V. *Ibid*, 1914.
Eastman: Newer Conceptions of Operative Technic in Hare Lip and Cleft Palate. *Annals of Surg.*, IL.
McGraw: Unsettled Questions in Treatment of Hare Lip and Cleft Palate, *Detroit Med. Jour.*, 1908.
Ulrich: *Lancet*, 1911.
Ferguson: Cleft Palate, *Jour. A.M.A.*, 1900.
Oakman: Surgical Treatment of Congenital Cleft Palate, 1915.
Brown: *Jour. Am. Med. Assoc.*, 1912, LIX.
Campbell: *Jour. Am. Med. Assoc.*, 1912.
Berry: *Surg. Gynec. and Obstet.*, 1915.
Eastman: *Ibid.*
Goyder: *Ibid.*
Berry: *Lancet*, 1914.
Blakeway: *Practitioner, London*, 1914.
Roberts: *Annals of Surg.*, 1916.

DISCUSSION.

DR. CHALMERS J. LYONS: I wish to compliment Dr. Baker upon his very valuable paper. It seems to me that it will be a very valuable contribution to the literature on cleft palate surgery. At the present time, as Dr. Baker has stated, there is very little written upon cleft palate surgery and much of the literature in vogue is not authentic.

There is one thing which I wish to emphasize and that is the best operative age. It seems that it does not make much difference how much we emphasize the best age of operation, we still find men operating for cleft palate who don't take into consideration the age. We get patients here who have been operated upon for cleft of soft palate in early infancy, that is, under twenty months. That is absolutely wrong. At such early ages there is little periosteum developed and we depend upon that for our flaps. Such surgeons have read that cleft palate should be operated upon early and they do it regardless of the condition. From the experience of most of the men doing this work, it is true that we must have these cases in early infancy if the hard palate is involved, for two or three reasons, namely, the maxillary processes can be formed by the thumb and finger and the operation can be done with very little shock to the patient. After the lip is closed the patient must be let alone and returned home until just before the patient begins to talk and then the operation for the closure of the soft palate should be made. There isn't any precedent for the successful operation of the soft palate before eighteen or twenty months and I wish the physicians over the state would understand that

that is the proper age for them to expect to get the best results.

We have found for the past few years that many times we would get small openings after the closure of the clefts and we have been trying to determine why these occurred, sometimes they are not larger than the diameter of a match, and at other times as large as a dime. We have been using a wire splint which has attached to it two lead plates for the purpose of splinting the muscular tissue. Recently we have determined that we could relax the palate sufficiently by two longitudinal incisions bucally to the blood supply of the palate, and our results so far have been very much better than those reported in this paper. We have not done enough yet to state whether that is the technic of choice or not, but I am satisfied that it is much better than attempting to use splints in the mouth allowing food particles to collect and thus causing infection. These longitudinal incisions differ from the old Langenbeck method in that they are made outside of the blood supply. In the old operation we have found that many of the partial failures were due to the lack of blood supply.

DR. HARRY M. MALEJAN: I think Dr. Lyons is to be congratulated upon his modification of the Brophy operation. Since the first of January we have been using this technic and we had fourteen cases of repair of the soft palate, and out of the fourteen cases there were twelve perfect results with normal palates when the patient left the Hospital. Of the two cases which failed, one patient had been operated on three times in a neighboring city and has at the present time an opening about the size of a dime. The second case was not a congenital cleft but a luetic cleft, and it sloughed away. I think there are three points in these operations for cleft palate, first, the preoperative treatment. In all such cases we have the tonsils and adenoids removed. This does away with most of the complications. In all of our last twelve cases we have not had any postoperative temperature. The second important point is the operative technic which Dr. Lyons has described. The third is the postoperative treatment. We have a hard time to get our work done properly because of the frequent changing of the nurses in the Hospital. Many of the staff members have to go and spray the mouths themselves. We use alphazone in 2 per cent. solution every two hours and 10 per cent. argyrol every four hours. This is not enough to cause gastrointestinal symptoms.

Our patients now are ready to leave the Hospital ten to fourteen days after the operation.

CORRELATION OF THE ROENTGENOGRAPHIC AND SURGICAL FINDINGS IN SIXTY-TWO OPERATED CASES.

JAMES G. VANZWALUWENBURG, M.D.

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Ever since we began the systematic examination of gastrointestinal conditions by the X-ray method we have insisted on conducting our examinations in complete ignorance of the clinical or laboratory findings. There are several reasons for adopting this attitude. We recognize that a previous knowledge of the clinical side of the case must invariably influence the examiner, consciously or unconsciously; either he is liable to confirm the clinical diagnosis or he will assume an attitude of such scrupulous rectitude that he is in danger of "leaning over backwards" with similarly erroneous results. Moreover, we felt that the method is on trial and that, to prove its value, it must show conclusions independently. Incidentally, it left the final judgment in the hands of the clinician, where it properly belongs, putting no strain on the *"entente cordiale"* so necessary for the proper co-operation essential to a new department.

We believe that this principle has been justified, and when we came to cast up the reckoning, made some interesting observations that we believe will be of interest to you, especially since such unexpurgated reports are infrequent in the literature. The resulting "batting average" has been somewhat disappointing, and for our comfort we have added a study of the provisional diagnosis with which the patient reached us.

This series of cases covers a period of time during which 380 odd cases were examined. Of these, 62 were reported to us as operated and the operative findings returned. Undoubtedly a greater number of cases came to laparotomy, but the remainder returned to their home physicians or went elsewhere, and no reports are available. Of these 62 cases several had to be rejected because of incomplete data, incomplete examination, or the discovery of conditions not in the gastrointestinal tract. There remain then 56 cases in which a comparison of surgical and X-ray findings is possible.

These cases are arranged in tabular form. (Table 1). The surgical diagnosis is represented by vertical columns and the X-ray diagnosis follows horizontal lines. Each case has been given a letter or character so that its position in the table could be immediately identified and reference to the records simplified.

Such a classification naturally allows but one diagnosis for each case, and in the case of multiple diagnoses it was necessary to select the most important for tabulation. Moreover, every diagnosis on such a table carries the same weight, whereas the diagnostician speaks with varying degrees of conviction. For our purposes we have distinguished "major" and

"minor" conditions, depending on the probable priority or the relative importance in the production or symptoms. For instance, "adhesions" have always been assigned a minor value where a primary cause for the adhesions could be recognized with any degree of certainty. From our experience it would seem that quite as frequently as not they assume a major rôle in the production of symptoms. Other difficulties constantly arose, and I trust you will pardon my very human weakness when I listed a case in which we had made a diagnosis of "appendicitis" and whom laparotomy disclosed had gall-stones and a peptic ulcer in addition, as a case of appendicitis.

TABLE 1.

X-RAY Diagnosis	CONDITIONS FOUND AT OPERATION						
	G—U	D—U	App	Adh	G—B	Car	Neg
Gastric Ulcer	**6**		A			**w**	
Ducdenal Ulcer		**3**		M Q			
Appendicitis			**H Y d f u x**				
Adhesions	L		**E N Z e q v 4 r**	**W a c n 1 2 7**	**I j y**		
Gall-Bladder		t	J g	P	**B G h k S**		
Carcinoma						**K R i m s**	
Diagnosis Impossible			U	o	V	S e	b
Negative			T X 5				
Miscellaneous			p		**F**		

On the table, a series of shaded rectangles running from the upper left hand corner diagonally downward and to the right represents an agreement between the surgical and the X-ray diagnosis. In these shaded areas are found 26 out of a total of 56 cases, representing a percentage of about 47 per cent. as entirely correctly diagnosed. In the fourth line, representing the cases in which a diagnosis of "adhesions" was made, but the primary cause of the adhesions could not be determined, are found 12 additional cases. These diagnoses are not incorrect but incomplete, and frequently adequate from the point of view of both the surgeon and the patient, since it led to a perfectly justified exploration. Including these increases the ratio to 38/56, or 67 per cent.

A further necessary classification, was the listing of six cases as "diagnosis impossible," where it was realized that some pathology was present, but no conclusion as to its nature was justified. Inasmuch as this conclusion was of no assistance either to the surgeon or the pa-

tient, these must be considered as failures against the X-ray method of examination.

The greatest interest naturally attaches to the "misses," and the causes leading to a failure to reach a correct diagnosis. The detailed study of these 18 cases reveals so many interesting, and, in many ways, extenuating circumstances that I propose to briefly consider each one of them.

Considering the cases of proven gastric ulcer, we find "L" diagnosed "adhesions" by us. Our report reads: "We think we are justified in diagnosing adhesions in the right upper quadrant presumably due to duodenal ulcer, possibly to gastric ulcer." Operation revealed extensive adhesions and a small gastric ulcer.

In the duodenal ulcer column, case "t" was diagnosed "gallbladder disease" principally on the evidence of a shadow in the gallbladder region. Operation revealed a fistula between the gall-bladder and duodenum through which barium had found its way into the former, simulating gallstone. A liberal interpretation of the facts might justify our placing this case in the gallbladder column.

The appendicitis column is interesting. In all, 22 patients had their appendices removed "for cause;" only six of these had received the proper diagnosis. Eight additional cases were labeled "adhesions," a diagnosis not incorrect in the light of the operation, and not impossibly the major cause of the symptoms in several cases, but, none-the-less, incomplete.

Case "A" was called "benign obstruction, due to pyloric ulcer." Exploration disclosed the omentum attached to the upper surface of the liver, lying as a strong band across the pylorus and causing obstruction. When this was severed, a mass was felt posterior to the stomach which could not be exposed. A ++++ Wassermann further complicated the picture. The temptation to include this case in the gastric ulcer column is very great.

In the cases "J" and "g" the error of interpreting the shadow of a full gallbladder as indicative of pathology, following the contention of Dr. George of Boston, led us astray. One of these cases also gave a history of an appendectomy three years previously.

Case "r" needs some comment. The diagnosis here was "adhesions;" a perisplenitis with adhesions and infarcts was discovered, and incidentally the appendix removed. The pathologic report is "chronic obliterative appendicitis."

Case "U" led to the report "no diagnosis possible;" "the appendix was found long, congested, nearly snared off at one point; right kidney contracted, thickened, irregular lower pole. Appendectomy. Pathologic report; chronic obliterative appendicitis." "Result, 10 weeks later, some pain over the left kidney; worse at night; otherwise well."

The three cases in which no pathology was indicated by the barium meal have no redeeming features.

"T" had an appendix removed and no other pathology noted at operation; the pathologist reported "fecal concretion, old inflammation." But the autopsy disclosed "Primary carcinoma of the cervix, (medullary), metastases in the retroperitoneal glands, adrenals, kidneys, lungs and bone marrow. Chronic parenchymatous nephritis, chronic diphtheritic cystitis, beginning gangrene. Old fibroid salpingitis."

"X" is quite as disconcerting. The surgical notes read, "A band of omental adhesions extending from the tranverse colon to the anterior abdominal wall; freed. Appendix retrocecal in a mass of adhesions, buried and sharply kinked, constricted at center, terminal half congested and swollen; appendectomy." The pathologist says, "Appendix negative." The X-ray report specifically notes the free mobility of the cecum in spite of the adhesions found at operation.

In "5" the appendix was free but obliterating and the draining lymph glands were enlarged. The X-ray examination held no suggestion of functional or morphological abnormality.

"p" represents a "flight of fancy." We discovered a mass distorting the duodenum and fixing the transverse colon. It proved to be a mass of fat. The indications of a really vicious appendix were entirely overlooked.

"Under "adhesions" are grouped those cases in which no obvious cause or excuse for the occurrence of inflammatory adhesions could be discovered at a thorough exploratory laparotomy. The majority are doubtless of such origin, although developmental bands and folds are well recognized causes of trouble.

Of these "M" and "Q" are very similar. In both duodenal ulcer was diagnosed from the deformity of the duodenal shadow; in both the distortion was due to a band of omental adhesions crossing the stomach and duodenum and attached to the superior surface of the liver. In both cases the findings were so typical of ulcer that a similar error must result from the examination.

"P" was diagnosed "gallbladder disease" on

the evidence of adhesions about the hepatic flexure and some deformity of the antral end of the stomach. The surgical notes cite "adhesions between the gallbladder and the hepatic flexure of the colon, * * * gallbladder normal, * * * Lane's kink, * * * uterus adherent to the anterior abdominal wall." The question might be raised whether the gallbladder could be considered normal under the circumstances.

"o" represents a wide discrepency between the X-ray findings and the amount of the pathology discovered. The upper abdomen was filled with a mass of adhesions binding the stomach, duodenum, and gallbladder together and to the anterior abdominal wall. The X-ray

In the disturbed condition of our knowledge of the X-ray diagnosis of gallbladder disease, the G-B division presents an agreeable surprise. In "V" the displacement and disturbance of a mass in the right upper quadrant was recognized but its nature could not be determined. It proved to be inflammatory and two stones were recovered. In "F" a large hepatic mass was diagnosed which proved to be secondary to an old gallbladder disease.

The carcinoma division is less satisfactory. Malignancy of the stomach is usually conceded to be diagnosed with greater certainty by the X-ray than any other abdominal condition. We succeeded only five times out of eight chances.

TABLE 2.

Medical Diagnosis	CONDITIONS FOUND AT OPERATION					
	G—U	D—U	App	Adh	G—B	CAr
Gastric Ulcer	**6**		A D			l
Ducdenal Ulcer		**t 3**	E Z	Q W n 7	j	w
Appendicitis			**U F u v x 45**			
Adhesions			T p r	**a 1 2**		
Gall-Bladder			J X g	p	**E G V n k 8**	
Carcinoma			e		I y	**D R K m i s z**

notes read, "9 o'clock plates are negative except for a rather curious deformity in the prepyloric region and a poorly filled cap. This looks more like traction deformity than that due to ulcer, from the fact that it is quite smooth in outline and shows a distinct angulation of the axis of the canal. However, there is little evidence to support the idea of traction and adhesions, the motility of the stomach, small bowel, and large gut being normal throughout, the hepatic flexure being easily separated, and there being no distention of the ascendans; nor do we think these findings justify a diagnosis of ulcer. We find a more definite diagnosis impossible."

"w" represents the malignant degeneration of a gastric ulcer in a very young man, and the malignant nature was not recognized. This also is an excusable error.

"S" is a more serious error. A careful review of the fluoroscopic notes and the plates fails to reveal any evidence of neoplasm. "l" was complicated by extensive adhesions about the pylorus, grossly deforming the stomach shadow, in which the characteristic defect of a carcinoma of the fundus was missed. A review of the plates demonstrates the evidence was there but was overlooked.

Finally "b" is interesting as a case reported by us as "diagnosis impossible, virtually nor-

mal." The doubtful appendix was removed because no other pathology was found.

For purposes of comparison, I have prepared a similar table (Table 2) of the "provisional diagnosis" with which these cases reached me as compared with the surgical findings. It is freely admitted that this is eminently unfair to the referring physician, since many of these are based on very hasty and superficial examination, the careful clinical examination being carried on at the same time as the roentgenologic examination. Nevertheless, it will serve to give us a basis for argument. This series is shorter than the previous one because the provisional diagnosis is not always given in the record. In many cases the diagnoses are multiple, and the first diagnosis given has been assumed to be the first choice, although the range is sometimes so great as to suggest there was little choice in the mind of the referring agent.

Although a detailed discussion of this table is not justified by the facts and would take too much time, I wish to call attention to a few outstanding facts that seem to me significant.

Gastric ulcer was found but once; it was diagnosed four times. Twice we were in agreement; in "6," which was correct, and in "A" which was incorrect as has been discussed before. Case "1" is probably a legitimate "miss," the condition probably being primarily an ulcer.

Duodenal ulcer was found twice; and diagnosed ten times. Four of these errors belong in the adhesion column, and two more were so placed by us. "w" is also a legitimate error. These cases demonstrate clearly the similarity of the symptoms and the functional disturbances caused by these two conditions.

Appendicitis was diagnosed seven times out of eighteen, but it was never wrongly diagnosed. The error here is on the side of "conservatism." Curiously the two tables are in agreement in only three cases, two having been referred by the Department of Gynecology; and one by the Surgeons; in fact only two correctly diagnosed cases of appendicitis came from the Internist. Neurology has a perfect score, 1/1.

In the matter of adhesions the ratio is somewhat better, three cases out of eight. But each of these three cases had a history of previous laparotomies, and the diagnoses were obvious.

The clinical record on gallbladder disease is distinctly creditable; out of nine cases six were correctly diagnosed. "j" was complicated with rather extensive adhesions, in "I" the surgeons frankly entertained the possibility of malignancy, as the internists opined, while in "y" we have only the simple statement of the surgeon "gallstones." This diagnosis was made four times when other conditions were found.

Practically all the cases of carcinoma were properly classified; the two exceptions, "1," and "w" evidently being cases of "malignant degenerations" of peptic ulcers, and there is much to be said in extenuation of the diagnoses in cases "e," "I," and "y."

In a general way we may sum up the tendencies of the two methods by noting that the clinician is prone to place the lesion too high in the G-I tract, that is, to confuse reflex neuroses with organic conditions, and this is particularly true in the cases of appendicitis and adhesions, while the X-ray method, as conducted here, is likely to fail from insufficient evidence, as well as to go astray after the will-o-the-wisp of some striking feature of very minor import. This, presumably, is a hang-over from the days when the roentgenologist expected to make his diagnoses on purely empirical signs and "complexes."

Where a hollow viscus can be completely filled with an opaque material, we may study its size, shape, position and, to some extent, its function. This, however, is possible only with the stomach, cap and colon. The former may be very satisfactorily studied by this method; the latter is normally so diversified in shape that minor changes in shape representing serious changes in function may entirely escape notice. It is rather remarkable to see the relatively small changes in the contour of the large bowel produced by massive adhesions. The remainder of the G-I tract is not open to this method at best, and we are forced to rely on the observed changes of function, especially that of motility. This is done by watching the progress of the opaque meal at various intervals and comparing the clearance time with the standards established by similar observations on the normal. The abnormalities so observed may profitably be studied in the light of the operative findings.

The normal stomach should be clear of the test barium meal in six hours. If a residue remains after an interval of six hours it is held to be pathologic and an attempt is made to estimate the size of the residue in ounces as a measure of the altered function. The distribution of this finding with reference to the surgical findings is shown in this table.

TABLE 3.

SIX HOUR GASTRIC RESIDUE.

	Ratio	Per cent.
Gastric Ulcer	1/4(?)	25(?)
Duodenal Ulcer	0/3	0
Appendicitis	9/26	34
Adhesions	15/35	42
Gallbladder Disease.....	6/12	50
Carcinoma	9/9	100

It should be noted that these ratios are calculated on the total number of times a given condition occurred. For instance, the total number showing adhesions was 35 of which 15 showed a six hour residue, but there were only 10 cases in which the adhesions were the only pathology found, and only three of these produced a residue. The ratio more properly should read 3/10 or 30 per cent. The revised table reads:

TABLE 4.

SIX HOUR RESIDUE (Major Diagnoses).

	Ratio	Per cent.
Gastric Ulcer	1/2(?)	50(?)
Duodenal Ulcer	0	0
Appendicitis	9/25	36
Adhesions	3/10	30
Gallbladder Disease	6/10	60
Carcinoma	9/9	100

The striking feature of this table is the relative frequency of this gastric finding in conditions not primarily gastric. The same feature is brought out in the observations at longer intervals, as follows:

TABLE 5.

GASTRIC RESIDUE. (Total Number of Cases).

	12 Hr.		24 Hr.	
Gastric Ulcer	1/4(?)		1/4(?)	
Duodenal Ulcer	0		0	
Appendicitis	2/26	8%	1/26	4%
Adhesions	1/35	3%	0	
Gallbladder Disease ..	0		0	
Carcinoma	6/9	66%	?	

The single case of gastric ulcer that appears in each of these tables and shows a high degree of gastric retention properly should be classified as "pyloric ulcer," a condition producing an entirely different X-ray picture and which possibly may show characteristic clinical features.

A gastric residue then occurs in many conditions besides gastric disease; in fact, it is rather noteworthy that, with the exception of carcinoma, gastric residue is the exception, while so high a degree of gastric retention as a 24 hour residue may occur in chronic appendicitis.

According to our standards, the ileum should be cleared in 12 hours. The following table shows the conditions in which such clearance failed:

TABLE 6.

TWELVE HOUR RESIDUE. (Ileal).

	Ratio	Per cent.
Gastric Ulcer	1/2	50
Duodenal Ulcer	1/1(?)	?
Appendicitis	14/25	56
Adhesions	6/10	60
Gallbladder Disease	7/10	70
Carcinoma	3/9(?)	?

This table must be considered in the light of the clearance time of the stomach, since the small bowel can scarcely be expected to clear until a stated time after it has received all of the gastric contents. So the cases of carcinoma should logically be excluded from this table, while the cases of peptic ulcer were associated with such extensive adhesions that, from a functional point of view, this condition was predominant. Practically every case that is left was associated with more or less extensive adhesions, and probably this is the determining condition, for we find ileal residue in 23/35 cases having adhesions of any sort or in 66 per cent. of cases.

Ordinarily the upper small bowel is empty during the later stages of digestion or contains only inconsiderable amounts of opaque material. A definite shadow in the region of the jejunum is pathologic and has been named a "high residue." It does not necessarily depend on a gastric residue. Its incidence is shown in the following table:

TABLE 7.

HIGH RESIDUE.

	Ratio	Per cent.
Gastric Ulcer	0	0
Duodenal Ulcer	0	0
Appendicitis	11/25	44
Adhesions	5/10	50
Gallbladder Disease	3/10	30
Carcinoma	1(?)	?

We consider it significant that no cases of peptic ulcer are included in this table. Just why certain cases should show this sign and others not, is not at all clear. We have supposed that the active inflammatory processes were more apt to show this finding but recently we have seen several cases that seem to contradict this hypothesis.

Another sign of some import is the so-called "secretion zone." This is indicative of a fluid secretion in the resting stomach, (12 hours after a meal) and was at one time considered pathognomonic of peptic ulcer. Its incidence is as follows:

TABLE 8.

SECRETION ZONE.

	Ratio	Per cent.
Gastric Ulcer	1/4	25
Duodenal Ulcer	2/3	66
Appendicitis	2/25	8
Adhesions	0	0
Gallbladder Disease	0	0
Carcinoma	?	?

In the course of this study we have tabulated a number of other signs singly and in combination, and the pattern of the fabric is not yet so clear that it may be appreciated by the casual observer. I will mention only one more because of its clinical interest. Where we have found a definite tenderness in the right iliac fossa, over the appendiceal shadow, we have so noted it in our protocols. The incidence of this finding follows:

TABLE 9.

RIGHT ILIAC TENDERNESS.

	Ratio	Per cent.
Gastric Ulcer	0	0
Duodenal Ulcer	0	0
Appendicitis	6/25	24
Adhesions	1/10	10
Gallbladder Disease	4/10	40
Carcinoma	0	0

These results are rather disconcerting to the clinician, but we can find no error in the observation. Nor is an adequate explanation at hand.

From this rapid survey, it appears that we are far from having any pathognomonic signs in roentgenology, and that the diagnosis must be made by careful correlation of many observations quite as in any other diagnostic method. More significant is the fact that many signs are common to unlike conditions, and if we seek a common cause, we can find none except the ubiquitous adhesion. If we assume that adhesions produce these abnormalities of function, it is quite as logical to assume that they also in part, and not unlikely, in large part, produce the symptoms and complaints. This satisfactorily explains the difficulty of recognizing the conditions clinically. It also explains the change that often occurs (in the character and the severity of the symptoms) with greater chronicity, a principle that is recognized and considered when the clinician attaches the greatest importance to the history of the first attack.

By what mechanism these abnormalities of function are produced, whether by mechanical obstruction, or by reflex neuromuscular and neuroglandular action, is one of the most urgent problems confronting the gastroenterologist of today. That the mechanism is not always the same is indicated by the variation in the combinations and the relative severities of these more easily recognized signs. We know perfectly well that extensive adhesions may exist without symptoms, while, on the other hand, apparently very inadequate adhesions are associated with, (and may be the cause of) serious trouble. What are the factors that determine these relations? Is it the position of the adhesion with relation to the parietal peritoneum? traction on the mesentery, on the omentum, the fixation of the small bowels? interference of either of its movements, peristalsis or with relation to the other abdominal contents? or does it depend on the irritation of an inflammatory process?

These are some of the questions that are suggested by this short series of cases. They are problems that confront us daily. They interest not only the roentgenologist but every one dealing with gastrointestinal conditions. And to us they do not seem impossible of some sort of approximate solution. Unfortunately, with our present organization, it seems beyond the reach of this department. For, even with the present excellent co-operation with the Department of Surgery, we are conceding several basic assumptions. We have to assume that any anatomic changes found by the surgeon represent in truth the causative pathology, we assume that the pathologist is able to distinguish between those changes that produce trouble and those that do not, e. g., in an appendix, or assume that, when the surgeon corrects what trouble he finds, the trouble will disappear and the patient will be well. This is not said in criticism of any department, but is simply a statement of a criticism that would justly lie against the work represented here irrespective of the number of the cases presented or the thoroughness of the correlation.

Let me illustrate by a specific example not included in the series tabulated. A graduate nurse was referred to me with a vague gastric complaint and a dread of gastric carcinoma. She had about reached the menopause and the referring physician considered all her troubles climacteric. He was very certain that I would find nothing significant. On my part, I found nothing in the least suggestive of any alteration of the digestive function, but did find seven large calcareous gallstones. There was no evidence of functional disturbance from these stones, they had probably been there a number of years, there was plenty of room in her abdomen to carry them without crowding, there

was no history of the usual or unusual episodes of gallbladder disease, nevertheless the surgeon (not in this Hospital) unhesitatingly and with considerable enthusiasm removed them and verified my count. But the patient is no better.

On paper this case is a signal triumph for the Department of Roentgenology. But is it?

Medicine took a long step in advance when it followed its cases into the autopsy room. That may do very well for medicine or neurology but it does not satisfy the surgeon. He is his own pathologist. His value as a surgeon depends largely on his knowledge of gross pathology. And he studies his gross pathology, not with a final and conclusive eye, but from a constructive viewpoint. He is also his own "experimental physiologist" and "vivisectionist." His interest does not end in the operating room, nor with the convalescence of the patient, but can and should go one step farther and follow his patients to their old environments and see what the results of his efforts have been. This the man in a limited private practice can not escape for he sees his result constantly with varying emotions. But in a large reference clinic, this is not always done, and the surgeon loses the opportunity to scrutinize the reasons he had for doing what he did, excellent reasons doubtless, but not necessarily the best reasons. And so he runs the risk of doing the same things for the same reasons, and teaching others the same lines of reasoning to similar dubious conclusions. The conclusions are undoubtedly more often right than wrong, but he is placed in a position of not being able to prove it.

Without a good "follow-up system" we can not escape the force of this criticism.

We have stated some of our problems. We need answers to all of them and to many more that have not been stated. To be sure, we have "hunches" on several of them, they form our stock in trade and serve as the basis of our efforts to interpret our findings, but they rest on too slender evidence to justify their publication in the Transactions of this Society. Our purpose is not to dispose of these questions but to state our position and arouse your interest.

Nor does this summary of 62 cases give a correct idea of the value of the radiographic method of examination. The problems are essentially complex and their various factors can not be expressed in simple terms. And much useful information which does not in itself determine a diagnosis is added to the sum total of our knowledge of the case which can not be expressed in any "table."

We believe our "little bit helps" and that the clinician shares this view is shown by the steady growth of the number of cases referred to us for our opinion.

DISCUSSION.

DR. CYRENUS G. DARLING: The men in the clinical departments should appreciate Dr. VanZwaluwenburg's independent method of diagnosis in spite of his modest claims of success. They would probably compare very favorably with most of the clinical diagnoses if fully written and later tested by operation or postmortem.

In many cases the pathology found at operation is not always clear and not infrequently some of it is overlooked. The difficulties encountered in the study of adhesions are not surprising when one considers the many sources of origin and the possible deformities they may cause to the alimentary tract.

Any peritonial inflammation may be followed by adhesions whether it arises from injury to the abdominal wall from without or an approaching perforation from within the abdominal organs.

The omentum in its protective capacity, attaches itself wherever needed and frequently remains at its post of duty long after the necessity has passed. Such an attachment may cause deformity of the stomach or any part of the alimentary tract by bands crossing the hepatic flexure of the colon. It may form a partial obstruction retarding the onward flow of the barium mixture and suggest the incompetent iliocecal valve.

The old appendicitis may have spread along the cecum to the underside of the liver making adhesions along the way which have remained while the appendix has recovered and assumed its normal form, provided the omentum did not take part in its protection.

Adhesions following operation are usually associated with the abdominal incision and omentum or gut involved to change the X-ray picture. Possibly these may retard the flow of the barium or even suggest an obstruction.

Probably no diseased organ in the abdomen presents such variations in size as the gallbladder and many of those cases giving the most pain and trouble are small and contracted, containing but one or few stones. These are deep under the liver and may also be covered by an inflamed mass of omentum as a protective agent. The single stone which frequently gives the best clinical history would be poor for X-ray diagnosis, again, a large full gallbladder may, by pressure, distort the position of surrounding organs, thus interfering with a correct X-ray reading.

The doctor appears best in his diagnosis of stomach and appendix changes because he has devoted more time to the study of these organs and they represent the beginning of a large percentage of the pathology of the abdomen. Beyond this, much of the pathology will be problematic unless the clinical history is carefully considered to give one direction.

I am sure that a further comparison of plates and findings will lead to greater accuracy in diagnosis both to the clinician and the roentgenologist.

DR. NELLIS B. FOSTER: A paper of this kind is of great use; it is a kind of clearing house that we all need now and then. It may show us up perhaps a little embarrassingly, but I am sure everyone working in a hospital gets an idea now and then that he is pretty good and to find out his real average is very good for him.

The diagnosis between gastric ulcer, gallstones and chronic appendicitis is one which every surgeon and internist of any experience recognizes as one that may be extremely difficult. It may not be always possible to say which one of those three is present. Further than the most careful examination, careful history and X-ray plates, we are not able to go. There is a certain element of satisfaction to be gotten out of the result which Dr. VanZwaluwenburg has shown us that may not appear on the surface. Only one case appeared as needing operation that should not have been operated upon. Granting that all of these cases of adhesions were benefited by operation, then all of the patients should have been either operated upon for therapeutic purposes or should have been explored with the idea of finding out if something could be done to help them. The thing which has puzzled me most since I have been in this clinic is the question of adhesions, and I am glad to know that it is bothering other people. Chronic appendicitis, as I see it here, is a new thing to me. I have been in the habit of going into the operating room and seeing my patients operated upon in the East. Cases with the extensive adhesions of the kinds that we see here are entirely new to me. Occasionally we did see such conditions following operation, but a majority of the cases which we see here have not been operated upon and we do not know the origin of the extensive peritonitis. It is one of the greatest difficulties to me to differentiate a chronic appendicitis, from these cases of adhesions. Probably they are primarily appendicitis with adhesions secondarily, as Dr. Darling has mentioned.

It is not surprising if one thinks of it, the difficulties which the X-ray Department finds in localizing pathologic processes. We know the number of conditions which can give rise to hyperacidity and we know that it is usually due simply to changes in motility in the stomach or reflex spasm in the pylorus—which is another way of saying a disturbance in the motility. Secretory changes are signs which we do not consider pathognomonic; not even in carcinoma. When you study the motor function upon which roentgenologists must depend principally for their interpretation, one meets with exactly the same nervous reflexes which one meets with in the secretory disturbances. So that the difficulties are easily understood. How to overcome them, however, is another thing. I think that probably in the course of time we shall be able to make much more accurate diagnoses upon these cases than we do at the present time, by better methods both in clinical medicine and in the use of the X-ray. The most important condition perhaps from the point of view of its immediate recognition, that of carcinoma, seems to have been better recognized than most of the other conditions, and we shall get what grain of comfort we can out of that.

I think we are all very much indebted to Dr. Van Zwaluwenburg for his very frank exposition of this subject.

REPORT OF A CASE OF TYPHOID SPINE.

WILLIAM H. GORDON, M.D.

House Physician, University Hospital, Ann Arbor, Michigan.

I report this case because it is one of the unusual complications of typhoid fever.

The patient, C. M., male, aged 21, American, single, sophomore literary student in the University of Michigan entered the University Hospital as an out-patient, December, 1916, with the complaint of pain in the lumbar region. This pain was so severe that he could not stand erect, and it was accentuated by the slightest movement.

The patient's father died of Bright's disease with cardiac complications. His mother died at 52, of Bright's disease. Four brothers and two sisters are living and in good health.

The patient has had the usual children's diseases with good recoveries. Since 1903 he has enjoyed good health. He denies lues and Neisser infection. He is a moderate drinker and uses tobacco.

The present illness began with an attack of typhoid fever August 24th, 1916. At this time the patient had a sick headache, which became worse daily. On the 29th he had pains in the abdomen which were not localized, diarrhea, and loss of appetite. He noticed that he had a fever on September 1st, and came to the University Hospital. At this time an examination revealed a much distended abdomen, seven to eight typical rose spots, palpable spleen but no enlarged glands. The Widal was positive with a 1-40 dilution in forty-five minutes. There

was a leucopenia of 6000, a temperature of 102 degrees and a positive diazo reaction on the urine. The patient was entered in the Contagious Ward of the University Hospital and was there from September 2nd to October 6th, 1916. During his stay he had the findings of a typical mild case of typhoid fever. The temperature reached its maximum at 104.0 degrees. After September 15th it never went over 100 degrees. At times during his illness he complained of pain in the lower lumbar region.

Upon his discharge from the Hospital, October 6th, the patient entered his second year as a student in the Literary College of the University of Michigan and proceeded to carry the regular work which is preliminary to the Freshman year in Medicine. At the same time he became careless in regard to himself and did too much outside work, supporting himself by playing at dances three to four hours twice a week.

About October 27th, he began to have pains in the right inguinal region. They were localized behind the anterior superior spine of the ileum, were deep seated and at the onset did not radiate in any direction. Gradually they became more severe and radiated around to the back at about the level of the third lumbar vertebra. About November 15th he had an abdominal examination; at that time the abdomen was everywhere soft, no muscle spasm was detected, and no tumor could be palpated. Over an area the size of the hand and localized about one-half way between the umbilicus and the anterior spine of the right ileum, there was tenderness, which was made more evident by flexing the flexed right lower extremity over the abdomen, and then extending the lower leg. The patient gave a history of having been constipated for a few days, and although the signs and symptoms of a typical case of appendicitis were not present he was directed to remain under observation for a few days and report any changes. From this time on the condition became worse. The patient says that the pain became more severe and at the same time he developed a stiffness of the back. He became weak and was unable to lift anything. Upon assuming the erect posture he had to support his back by pressure with his hand over the lumbar region and until he had fully straightened himself he would have severe pains in the lower spine, which at times radiated around the lower back and abdomen and down the back of the leg. This condition became worse day by day and finally the whole back seemed to be sore especially on the right side. Also the pain, which at first was present only upon movement, became constant. He says he could not stand erect, that his body would lean forward and to the right, also that when he walked he had to make sure that he had each foot firmly upon the ground before taking another step.

Examination of the patient December 11th shows a marked limitation of all motion from the 7th cervical vertebra to the sacrum. All the motions of the spine are associated with marked pain, and upon palpation of the spine there is marked tenderness in the lumbar region over the 2nd to 5th lumbar vertebrae. The patient is unable to stand erect. His body is bent forward from the hip and a little to the right. Upon walking he places each foot carefully upon the floor before proceeding. He says that any jar causes great pain in the back. Upon questioning he says that he has had a marked constipation, which at times was replaced by diarrhea and vomiting.

X-ray examination shows a marked osteogenetic proliferation of the right side of the bodies of the 3rd and 4th lumbar vertebrae, the intervertebral disc being primarily involved. A plaster dressing was applied to the back and the patient was sent home December 20th, 1916, and told to remain quiet, live on a forced diet and put himself under his family physician's care. While at home the patient developed an attack of acute enteritis with vomiting, diarrhea, abdominal pain, slight delirium and a temperature which reached 104.2 degrees. Upon removal of the plaster dressing the temperature returned to normal and the symptoms ceased. From this time, early in January, 1917, the patient remained quiet and as a result he improved so much that he entered the University again for the second semester in February. At this time the pain in the back had almost completely disappeared, there being very little limitation of movement. At the present time there is no deformity to be seen, no limitation of motion, and pain is elicited only upon exaggerated movement of the spine. There are no intestinal or abdominal symptoms.

The diagnosis of typhoid spine is made upon the following findings:

(1) History of a mild illness with typhoid fever. During this illness the patient complained of pains in the lumbar region.

(2) Symptoms of pain in the abdomen two months after convalescence from typhoid fever. These pains became more severe and finally became localized in the spine and especially in the 3rd and 4th lumbar vertebrae.

(3) Marked limitation of motion of the spine.

(4) Posture upon standing was that of the body bent forward upon the sacrum. Attitude upon walking was one of preventing any jar to the spine.

(5) The progressive character of the spinal disease which ceased and became retrogressive upon treatment.

(6) The X-ray findings were those of an osteogenetic proliferation and primary involvement of the intervertebral disc which is a characteristic picture of the condition found after typhoid and other fevers.

(7) The very short time required for the condition to respond to treatment.

The only other condition to be considered in this case is tuberculosis of the spine, or Pott's disease. This disease is ruled out by (1), (6) and (7).

I wish to thank Drs. Washburne, VanZwaluwenburg and Watton for the use of their finding in reporting this case.

DISCUSSION.

DR. HAROLD DEB. BARSS: This case illustrates clearly the need of careful routine examinations. When the patient first came to the Hospital for this spinal trouble, all his symptoms were referred to the front of the abdomen. We have found ourselves liable on a number of occasions to make a mistake believing that we were dealing with an abdominal condition, where primarily the disease is within the spine. Pressure upon the spinal roots will cause pain in the terminations of the spinal nerves and therefore we try to make the routine examination considering especially the spine in conditions of abdominal pain, because we have found ourselves on other occasions almost making an error. I think the diagnosis in this case is correct. Sometimes the diagnosis between Pott's disease and acute typhoid spine is almost impossible. Fortunately the treatment of the two conditions is the same and if one clears up readily under treatment we should believe that we are dealing with a typhoid spine rather than an acute Pott's. Fortunately deformity seldom takes place under treatment. I don't know the ultimate condition of the spine and I would like to see a radiogram of the spine after all the symptoms have disappeared.

DR. JAMES G. VANZWALUWENBURG: This is a rather unusual radiogram for typhoid spine. In this case we were fortunate in being able to make the diagnosis of typhoid spine on the radiogram. As a general rule typhoid conditions of the bones are sharply localized and tend to an osteoplastic ulcer rather than an osteoclastic change, reconstructive rather than destructive. In the hard bones, such as the long bones, we may find small sharply localized abscesses which are fairly typical of typhoid fever. There is no other condition so sharply localized. Typhoid spine commonly involves the body of the centrum and is usually unilateral. This is unusual in that it involves the intervertebral disc. The osteoplastic changes are very well shown. I also should like to see by what process this pathology heals, whether by formation of a bony splint on the outside, or a return to the original condition.

DR. ROBERT H. BAKER: There is probably no other spondylitis other than tuberculosis which can come on with such acute onset as typhoid spine. In the history of this case we find that the patient one month after discharge from the Hospital developed symptoms which might have been interpreted as appendicitis. One month following that the X-ray was able to demonstrate very definite proliferation along the transverse processes which must have shown more or less calcification within the two months following his typhoid. It seems unlikely that any process could develop osseous formation within that time and be absorbed as typhoid spine is supposed to do. Osler classifies typhoid spine under three heads. One opinion is that it is almost entirely a neuropathic condition in which the symptoms are entirely neurotic, the clinical signs of fixation of the spine being almost totally absent. There is a second form in which the X-ray findings are almost negative and yet clinically temperature, nausea and vomiting are present. The final class which is probably a further stage of the second, presents definite spinal changes demonstrable by the X-ray. To me it seems unlikely that the spine which shows such widespread fixation and such local findings could be due entirely to typhoid. To me the X-ray findings of this patient at the time of his convalescence from typhoid would be much more interesting than those of the present date. I would like to know if he had any pathology of the spine to begin with.

DR. CYRENUS G. DARLING: I would like to ask Dr. Gordon if he considered the attack which the patient had at home as a possible second attack of typhoid fever.

DR. WILLIAM H. GORDON: This condition of acute enteritis which occurred after he went home I consider was a recurrence of his typhoid fever. I think that the patients who have the diagnosis of typhoid spine made should wear the jackets much longer than this jacket was worn, but when they get away from the doctor who is treating them it is sometimes impossible to have this treatment carried out.

I think we should consider many of the cases of acute abdominal pain which come in with the diagnosis of appendicitis, as conditions of the spine. I have found in the House Physician's Office that I have diagnosed appendicitis very often and the diagnosis has been changed to spondylitis, as a result of scarlet fever, typhoid fever or some other acute infection.

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August

Editorials

THE DANGERS OF SERVICE.

The following statement taken from the *Journal of the A.M.A.* will refute the many rumors and erroneous statements that have been made in regard to the mortality in the medical ranks during the war:

There has been such an astonishing amount of misinformation, exaggerated and sensational statements, published in this country regarding the casualties among medical officers in the British Army that Col. T. H. Goodwin of the British Army Medical Service, now in this country, cabled to the British War Office for the actual facts. He received the following data: The total casualties among medical officers of the British forces, on the western front, from the beginning of the war to June 23, were: killed, 195; wounded, 707; died of disease, 62. Hence the total number of casualties from actual war injuries on the western front was 902, of which 195 were in killed. This is entirely different from some of the statements which have received wide publicity in this country—some even semiofficial in character—which have reacted to the detriment of the efforts to secure officers for the Medical Reserve Corps.

PATRIOTIC COMMITTEES.

From several County Societies we have received full remittance for the special assessment that was spread to create a Patriotic Fund. It is desired that every society make the effort to send their total amounts by September First.

County Secretaries are also requested to urge to the Chairman of Local Committees to promptly report the names of all their members who enter active service.

A little concentrated effort in each society will enable the Council to perfect its plans for the conservation of the practices of enlisted members.

UNPAID DUES.

In our last issue we published a list of members in arrears for dues. The list thus published **was not without error. There were some names** of deceased members, of whose death we have received no notice. Again there were names of men whose dues were paid and while credited were not removed from the list solely by clerical error, either in the office of the County Secretary or this office. These errors we believe now to be corrected and the list accurate. A number have become re-instated by the payment of their dues.

We tender our apologies to Dr. Hitchcock of Detroit whose name was published as delinquent by error of this office. Dr. Hitchcock's dues were paid in January, in fact his dues for years have been paid among the first. We regret the clerical error and are pleased to make amends.

Again we urge that county officers endeavor to secure re-instatement of the following delinquents:

ALPENA.

A. A. Stuart .....Lincoln
John Wilson .....Spruce

ANTRIM, CHARLEVOIX, EMMET.

J. B. Brown .....Levering

W. H. Marshall .....Boyne City
R. R. Miller .....Harbor Springs
E. R. Moorman .....Pellston
W. H. Parks .....East Jordan
W. W. Walton .....Almira
R. H. Wessels .....Mancelona

BARRY.

G. W. Lowry .....Hastings
S. C. McIntyre .....Woodland
J. W. Rigterink .....Freeport

BAY.

C. W. Ash .....Bay City
S. L. Ballard .....Auburn
V. H. Dumont .....Bay City
Nina Ely .....Bay City
E. J. M. Flynn .....Bay City
H. M. Gale .....Bay City
J. A. Keho .....Bay City
R. McGeogh .....Bay City
J. McLurg .....Bay City
G. P. McNaughton .....Standish
G. E. Orth .....Linwood
F. H. Randall .....Bay City
R. E. Scrafford .....Bay City
A. F. Stone .....Bay City
Albert Stealey .....E. Tawas
C. M. Swantek .....Bay City
G. W. Trumble .....Bay City
V. L. Tupper .....Bay City
E. C. Warren .....Bay City
A. J. Zaremba .....Bay City

BENZIE.

H. J. Kinne .....Frankfort
F. H. Stone .....Beulah

BERRIEN.

R. B. Howard .....Three Oaks
D. D. J. Hays .....New Troy
A. A. Rosenberry .....Benton Harbor

CALHOUN.

C. R. W. Southwick ..... Olivet

CASS.

All paid.

CHEBOYGAN.

A. J. Sahs .....Cheboygan

CHIPPEWA.

E. H. Campbell .....Newberry
A. McCandlass .....Sault Ste. Marie

CLINTON.

Henry Cook .....Fowler
C. R. Keller .....Maple Rapids
E. L. Martin .....Maple Rapids

DELTA.

G. C. Bartley .....Escanaba
M. P. Fenelon .....Escanaba
W. A. Lemire .....Escanaba
Louis Treiber .....Bark River
E. R. Wescott .....Spalding

DICKINSON-IRON.

J. A. Crowell .....Iron Mountain
A. M. Darling .....Crystal Falls
M. F. Dockery .....Sagola
J. O. P. Edwards .....Alpha
R. E. Hayes .....Channing
C. F. Larson .....Crystal Falls
E. M. LiLbby .....Iron River
W. McBurney .....Stambaugh
E. B. McDaniel .....Crystal Falls
A. A. Metcalf .....Crystal Falls
W. S. Stevens .....Iron River

EATON.

J. B. Bradley .....Eaton Rapids
H. W. Kenfield .....Mulliken
C. L. McLaughlin .....Vermontville
W. H. Rand .....Charlotte
J. T. Warford .....Mulliken

GENESEE.

A. B. Clark .....Swartz Creek
A. R. Ingram .....Fenton
B. G. McGarry .....Fenton
J. W. Parker .....Grand Blanc
J. R. Shank ..... Flint
J. D. Stuart ..... Flint
H. R. Thomas ..... Flint

GOGEBIC.

All paid.

GRAND GRAVERSE, LELANAU.

F. C. Mayne .....Traverse City
W. M. Payne .....Suttons Bay

GRATIOT, ISABELLE, CLARE.

J. S. Bender .....Bannister
C. E. Burt .....Ithaca
C. M. Denny .....Middleton
W. M. Drake .....Breckenridge
A. T. Gretchell .....Mt. Pleasant
D. M. Langan .....Harrison
F. C. Sanford .....Clare
W. A. Sayers .....Mt. Pleasant
J. R. Shaffer .....Elm Hall
F. C. Thornburgh ..... Alma

HILLSDALE.

W. R. Ditmars .....No. Adams
H. H. Frazier .....Hanover
W. H. Sawyer .....Hillsdale

HOUGHTON.

J. C. Abrams .....Calumet
R. E. Ames .....Cincinnati
C. H. Rodi .....Calumet

HURON.

S. Stevens ..... Ubly

IONIA.

J. C. Fleming .....Pewamo
O. P. Geib .....Hubbardston
F. W. Martin .....Portland

INGHAM.

C. M. Davis .....Lansing
F. H. Harris .....Lansing
J. B. Park .....Okemos

JACKSON.

Ferdinand Cox .....Horton
H. G. Glover .....Jackson
W. M. Lake .....Grass Lake
A. R. Williams .....Jackson

KALAMAZOO.

B. T. Butler .....Kalamazoo
F. A. Butterfield .....Lawrence
J. F. Chapin .....Schoolcraft
L. E. Clark .....Otsego
R. N. Dunnington .....Hartford
A. H. Gifford ..... Alamo
A. M. Hutton .....Oshtemo
B. H. Southworth .....Schoolcraft
Howard Stuck .....Allegan

KENT.

W. S. Bell .....Grand Rapids
H. M. Blackburn .....Grand Rapids
R. C. Breece .....Ada
J. Buersma .....Grand Rapids
H. W. Dingman .....Grand Rapids
C. H. Fairbanks .....Grand Rapids
J. A. Heasley .....Grand Rapids
Jas. Henry, Jr. .....Grand Rapids
J. B. Hilliker .....Grand Rapids
C. E. Hooker .....Grand Rapids
W. A. Hyland .....Grand Rapids
R. J. Kirkland .....Grand Rapids
M. A. Leach ..... Grand Rapids
A. M. Martin .....Grand Rapids
R. Maurits ..... Grand Rapids
P. S. Miller .....Grand Rapids
C. A. Moon .....Grand Rapids
C. C. Slemons .....Grand Rapids
G. J. Stuart .....Grand Rapids
S. D. Swantek .....Grand Rapids
R. T. Urquhart .....Grand Rapids

LAPEER.

Paul Thompson .....Lapeer

LENAWEE.

A. W. Chase .....Adrian
W. T. Clenns .....Blissfield
R. A. Davis .....Clinton
C. C. Hyde .....Addison
E. T. Morden .....Adrian
R. H. Nelson .....Hudson
L. G. North .....Tecumseh
O. N. Rice .....Tipton

LIVINGSTON.

E. B. Pierce .....Howell
J. D. Singer .....Brighton
W. J. Wright .....Gregory

MACOMB.

H. G. Berry .....Mt. Clemens
W. F. Lungerhausen .....Mt. Clemens
C. M. Mann .....Halfway
J. F. O'Keefe .....Mt. Clemens
A. A. Parisot .....Mt. Clemens
J. H. Seaman .....New Haven
A. N. Shotwell .....Mt. Clemens
A. J. Warren .....Mt. Clemens
V. H. Wolfson .....Mt. Clemens

MANISTEE.

S. H. Cornell .....Copemish

MARQUETTE-ALGER.

R. S. Buckand ..... Baraga
H. M. Cunningham .....Marquette
C. J. Larson .....Negaunee
H. A. Sharpe .....L'Anse
T. J. Wilson .....Palmer

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E. J. Kirwan .....Ludington
F. McCandless .....Ludington

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R. P. Allen .....Remus

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All paid.

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All paid.

MONTCALM.

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J. H. Abblett .....Fairview

ONTONAGON.

All paid.

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All paid.

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Jos. DePree ..... Zeeland
P. H. Fisher .....Hamilton
J. F. Peppler .....Wyoming Park
G. H. Thomas .....Holland
W. J. Vandenberg .....Holland
A. Vander Veen .....Grand Haven
W. S. Walkley .....Grand Haven

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W. A. DeFoe .....Saginaw
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Arthur Grigg .....Saginaw
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M. D. Ryan .....Saginaw
T. L. Ryan .....Saginaw
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C. S. Watson .....Saginaw
R. S. Watson .....Saginaw
T. M. Williamson .....Saginaw
P. S. Windham .....Saginaw

SANILAC.

All paid.

SCHOOLCRAFT.

All paid.

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A. L. Arnold .....Owosso
H. L. Arnold .....Owosso
L. M. Cudworth .....Perry
C. B. Porter .....Owosso
G. A. Sackrider .....Owosso
G. O. Switzer .....Ludington
H. T. White .....New Lothrop
P. S. Willson .....Owosso

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D. M. Kane .....Sturgis
J. H. Moe .....Sturgis
F. W. Robinson .....Sturgis
A. A. Wade .....Howe, Ind.

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Q. O. Gilbert .....Ann Arbor
H. H. Johnson .....Ypsilanti
W. A. Kloppenstein .....Manchester
I. D. Loree .....Ann Arbor
F. F. Pyle .....Milan
A. S. Warthin .....Ann Arbor
C. L. Washburne .....Ann Arbor

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C. G. Anderson .....Detroit
W. R. Baker, ...Detroit
V. D. Barnes .....Detroit
G. C. Bassett .....Detroit
R. Beattie .....Detroit
C. C. Benjamin .....Detroit
A. E. Bernstein .....Detroit
John Blake .....Detroit
A. C. Blakeley .....Detroit
T. F. Brady .....Detroit
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C. C. M. Conley .....Detroit
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C. G. Crumrine .....Detroit
R. F. DeBlois .....Detroit
V. C. Doherty .....Detroit
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M. S. Dubpernell .....Detroit
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A. Fellman .....Detroit
W. A. Fenner .....Detroit
G. H. Fielder .....Detroit
L. R. Fitzgerald .....Detroit
O. A. Fischer .....Detroit
C. A. Fisher .....Detroit
N. M. K. Fisk .....Detroit
O. C. Fluemer .....Detroit
H. E. Fogt .....Detroit
L. Galton .....Detroit
I. S. Gellert .....Detroit
D. L. Gordon .....Detroit
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H. W. Green .....Detroit
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B. J. Hamilton .....Detroit
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L. T. Henderson .....Detroit
Thos. Henderson .....Detroit
L. H. Herbert .....Detroit
A. M. Humber .....Detroit
W. H. Hutchings .....Detroit
F. W. Hyde .....Detroit
E. B. Keeler .....Detroit
J. B. Kennedy .....Detroit
W. Y. Kennedy .....Detroit
J. A. Kinsey .....Detroit
A. W. Kipp .....Detroit
M. E. Kohn .....Detroit
E. P. Koneczny .....Detroit
S. A. Kulick .....Detroit
P. A. Klebba .....Detroit
W. C. Lambert .....Detroit
W. P. Lane .....Detroit
T. M. Lawton .....Detroit
M. A. Layton .....Detroit
John Lee .....Detroit
C. J. Lehman .....Detroit
R. S. Linn .....Detroit
J. S. Lipsky .....Detroit
L. W. Lyon .....Detroit
F. T. McCormick .....Detroit
Grant McDonald .....Detroit
G. H. McFall .....Detroit
G. H. McMahon .....Detroit
W. M. Manton .....Detroit
N. J. Mallory .....Detroit
E. S. Martin .....Detroit
A. Metzner .....Detroit
W. E. Miller .....Detroit
E. T. Milligan .....Detroit
A. R. Moon .....Detroit
C. W. Morey .....Detroit
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E. J. O'Brien .....Detroit
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E. J. Panzner .....Detroit
E. Rood .....Detroit
F. D. Royce .....Detroit
W. D. Ryan .....Detroit
J. W. Schureman .....Detroit
Eugene Smith, Jr. .....Detroit
A. M. Stirling .....Detroit
J. D. Stuart .....Detroit
Alexander Thomas .....Detroit
L. C. Thomas .....Detroit
E. D. Tichnor .....Detroit
T. Walker .....Detroit
C. E. Watson .....Detroit
W. R. Henderson .....Detroit

PATRIOTIC COMMITTEES.

We have received notices of County Societies appointment of the appended list of local Patriotic Committees. Many of our societies have been derelict in the matter. We urge that these Committees be appointed this month and notice sent to the State Secretary:

ALPENA.

Dr. D. A. Cameron, Chairman .....Alpena
Dr. E. E. McKnight .....Alpena
Dr. D. A. Dunlop .....Alpena

BERRIEN.

Dr. C. N. Sowers, Chairman .....Benton Harbor

Dr. W. T. Bertrand .....Coloma
Dr. H. G. Bartlett .....St. Joseph
Dr. B. D. Giddings .....Niles
Dr. R. B. Howard .....Three Oakes

BRANCH.

Dr. D. H. Wood, Chairman .....Coldwater
Dr. P. H. Gunsallus .....Bronson
Dr. E. E. Hancock .....Union City
Ray Whitmore .....Quincy
S. Schultz .....Coldwater

CALHOUN.

Dr. W. L. Godfrey, Chairman.....Battle Creek
Dr. E. L. Parmeter .....Albion
Dr. W. H. Haughey .....Battle Creek
Dr. R. V. Gallagher .....Battle Creek
Dr. C. E. Stewart .....Battle Creek San.

CHIPPEWA.

Dr. Robert Benne .....Sault Ste. Marie
Dr. I. V. Yale .....Sault Ste. Marie
Dr. J. A. Ferguson .....Sault Ste. Marie

GENESEE.

Dr. J. W. Handy .....Flint
Dr. H. R. Niles .....Flint
Dr. F. W. Tupper .....Flint
Dr. R. E. Burwell .....Flint
Dr. A. S. Wheelock .....Goodrich

HURON.

Dr. W. J. Herrington, Chairman .....Bad Axe

IONIA.

Dr. E. F. Beckwith .....Ionia
Dr. F. M. Marsh .....Ionia
Dr. J. J. McCann .....Ionia

KENT.

Dr. B. R. Corbus, Chairman .....Grand Rapids

KALAMAZOO.

Dr. L. H. Stewart, Chairman .....Kalamazoo
Dr. F. H. Tyler .....Kalamazoo
Dr. A. H. Rockwell .....Kalamazoo
Dr. C. L. Bennett .....Gobles
Dr. A. L. Van Horn .....Otsego

MUSKEGON, OCEANA.

Dr. I. M. J. Hotvedt, Chairman .....Musekgon
Dr. J. T. Cramer .....Muskegon
Dr. A. F. Harrington .....Muskegon

SANILAC.

Dr. C. G. Robertson, Chairman .....Sandusky
Dr. H. H. Leavenworth .....Croswell
Dr. J. F. Waltz .....Brown City

SHIAWASSEE.

Dr. A. M. Hume, Chairman .....Owosso

ST. CLAIR.

Dr. M. Willson, Chairman .....Port Huron
Dr. W. G. Wight .....Yale
Dr. W. H. Smith .....St. Clair
Dr. C. C. Clancy .....Port Huron
Dr. C. B. Stockwell .....Port Huron

WAYNE.

Dr. J. N. Bell, Chairman .....Detroit
Dr. W. J. Wilson .....Detroit
Dr. Wm. Donald .....Detroit
Dr. J. E. Davis .....Detroit
Dr. S. Knight .....Detroit

Editorial Comments

From time to time we have directed attention to our advertisers. We are compelled to again reiterate the necessity of continuing the patronage of these advertisers. It is absolutely essential that on all ocasions preference should be given to our advertisers.

The pressure of the varied activities that have been thrust on us during the past few months has occasioned so great an encroachment on our time that it has been impossible to accept invitations to attend the meetings of several county societies. We hope to be able to visit these societies during the early winter.

Until greater substantiating evidence is at hand we must refrain expressing opinions or definite conclusions on subjects pertaining to the medical profession response to enlistment in the Medical Corps. We do not believe that the threat expressed by Dr. Martin in New York was warranted. Further we are of the opinion that had the task of securing enlistments been delegated to the officers of the A.M.A. and its allied state and county units, the work would have been accomplished more expeditiously. We understand that Dr. Franklin Martin was a self imposed representative. If that impression is true we must conclude that he must not attempt to coerce by fear of draft. The profession will not be found lacking. All that is necessary is to conduct the work through the established channels of organization.

The Harper Unit is Michigan's first organized unit to depart for duty. Individuals have responded and are responding but the Harper Unit is the first group to collectively set forth on their patriotic duty. The following is the personnel:

Maj. Angus McLean, Maj. Preston M. Hickey, Maj. Henry N. Torrey, Capt. Roland Parmeter, Capt. Louis J. Hirschman, Capt. Ernest K. Cullen, Capt. George E. McKean, Capt. William Spitzley, Capt. John C. Dodds, Capt. Robert G. Owen, Capt. Walter D. Ford, Capt. James F. Breakey, First Lieut. Alexander M. Stirling, First Lieut. Fred G. Buesser, First Lieut. LeRoy L. Belt, First Lieut. Hampton P. Cushman, First Lieut. Edward J. O'Brien, First Lieut. Duncan A. Campbell, First Lieut. Alfred D. LaFerte, First Lieut. Cyrenius B. Lockwood.

We cannot resist commenting on the fact that Uncle Sam has not seen fit to employe the services of osteopaths, chiropractors, Christian Scientists and members of other pseudo-cults to examine recruits or administer to the ills and injuries of our troops. The osteopaths are seeking recognition with but little hope of success.

When the final summarization is concluded we feel assured that our profession will have acquitted itself with honor and that the medical rank will be endowed with greater authority and recognition in all mobilizations.

Yes, our society bought Liberty Bonds. The finance committee authorized the investment of $2,000 in these bonds.

State News Notes

The following Michigan physicians are in training at Ft. Benjamin Harrison:

Artemus W. Chase, Adrian; George M. Lochner, Adrian; Rollan W. Krafs, Ann Arbor; Harry M. Malejan, Ann Arbor; Udo J. Wile, Ann Arbor; Elijah Van Camp, Athens; Bernard J. Beuker, Atwood; Norman D. Murphy, Bangor; W. P. Morrill, Benton Harbor; Matthew R. Slattery, Bay City; Francis G. Fisher, Cannonsburg; Warren L. Babcock, Detroit; Fredk. W. Baeslack, Detroit; John D. Buck, Detroit; Adolph E. Dreyer, Detroit; Carey P. McCord, Detroit; Frederick H. Newberry, Detroit; Wm. J. Stapleton, Jr., Detroit; Frank Suggs, Detroit; Wm. J. Du Bois, Grand Rapids; Alexander Morrison Martin, Grand Rapids; DeWitt C. Adams, Highland Park; Geo. S. Foden, Highland Park; Verner H. Kitson, Ionia; Clarence Edward Burt, Ithaca; Randal M. Cooley, Jackson; Roscoe G. Leland, Kalamazoo; Gordon F. Willey, Kalamazoo; M. L. Holm, Lansing; Milton Shaw, Lansing; Geo. Waters, Memphis; Alexander J. Mackenzie, Port Huron; Don H. Silshy, St. Johns; R. C. Winslow, Sault Ste. Marie; Lawrence Woodlock, Stockbridge; Chas. V. Crane, Tawas City; Jas. R. Martin, Traverse City.

The first 1,000-bed unit hospital in the country will be the enlarged Detroit College of Medicine and Surgery base hospital unit, No. 36.

The unit will be supplemented with departments for treatment of eye, ear, nose and throat diseases, as well as in general surgery.

This announcement was made by Lieut. Col. Burt R. Shurley, head of the unit, upon his return from Washington, Thursday.

Thirty-five nurses will be added, as will fifty enlisted men for the reserve force. The organization will be completed in a few weeks. Fifty thousand dollars to fit out the special departments has been guaranteed by Detroit commandery, Knights Templar.

Dr. Eugene Smith, Jr., of Detroit has resigned as surgeon of the police department.

Dr. Hugo Freund has received an honorable discharge from the Medical Reserve Corp. He is being considered for appointment on the Detroit Board of Health.

The Detroit Clinical Laboratory has issued the first number of a very creditable publication to be known as Laboratory Aids in Diagnosis. It will be sent free to all making their desires known. Address Detroit Clinical Laboratory, 33 High St., Detroit.

Dr. Geo. LeFevre of Muskegon was called to Washington, July 27th, for conference with the National Defense Committee. Dr. LeFevre is president of the State Board of Registration in Medicine.

Dr. Henry J. Pyle, who completed his course at P. and S., Columbia University, N. Y., has become associated with Dr. F. C. Warnshuis of Grand Rapids.

Dr. W. A. Spitzley of Detroit was married July 4 to Miss Jane Robinson. Capt. Spitzley departed with the Harper Unit immediately after the ceremony.

The Upper Peninsula Medical Society will hold its annual meeting at Escanaba, August 2d and 3d, as the guests of the Escanaba physicians.

Dr. W. J. DuBois, Councillor of the Fifth District, was ordered to Ft. Benjamin Harrison and entered service July 4th.

Dr. S. R. Edwards of Calumet has located in Grand Rapids and is associated with Dr. J. G. Huizinga.

Dr. P. D. McNaughton of Calumet has been appointed Major in the Medical Reserve.

Commencing July 10th the State Board of Health will make Wassermann tests free of charge.

Dr. Henry B. Carstens of Detroit has landed and is in service in France.

Dr. V. C. Vaughan, Jr., and Dr. J. W. Vaughan are reported as in service in France.

Dr. L. A. Moss of Newberry committed suicide July 9th.

Dr. A. K. Bennett and Miss Margaret Collin of Marquette were married in June.

Dr. Herbert F. King, formerly of Grand Rapids but of late years of Loomis, N. Y., died June 25th.

Dr. Reichard of Ashley has located in Flint.

Please remember our advertisers.

County Society News

BERRIEN COUNTY

At a meeting of the Michigan State Medical Society held in Battle Creek, May 10th, 1917, the Society went on record pledging its membership to see to it that the families of all doctors who enlist, and do millitary service away from home, shall not want.

The Berrien County Medical Society passed a Resolution on May 17th, 1917, unanimously approving this plan. Those of us who remain at home are thus enabled to do a patriotic thing for our country, and at the same time show our loyalty to the profession in a material way.

This Committee will keep in touch with the families and in case of need it will be reported to the proper source, and immediate assistance will be forthcoming.

To carry out this plan, the Michigan State Medical Society now asks each member of a component Society for Five Dollars, ($5.00). Kindly mail your check without delay to Dr. C. N. Sowers, Benton Harbor.

We all realize, I think, the meaning of this war for America, and the whole world. Let us help make the "World Safe for Democracy." Let us not think of patriotism and dollars in the same breath, but let us give cheerfully. Let us sacrifice if necessary to aid in this great humanitarian work, and bring about as soon as possible, a lasting and durable peace.

Yours sincerely,
THE PATRIOTIC COMMITTEE.

BRANCH COUNTY

The fifth annual picnic of the Branch County Medical Society was held at Pleasant Ridge, Marble Lake, on Tuesday, July 17th, 1917. A large proportion of the physicians of the county were present, together with their families, and the usual good time for which the social functions of Branch County's medical gatherings have become noted was again realized.

As the weather for the day started out somewhat inclement, the tables were spread upon the spacious porch of "The Ridge Hotel," where everyone ate, talked and enjoyed themselves to their heart's content. Soon after the dinner hour, the clouds passed away, and this beautiful lake resort was ours to enjoy, in all the loveliness which nature and art has bestowed upon it.

About 2:30 p. m., the meeting was called to order by president, Dr. R. W. Ridge, and as this was also the time for the regular meeting of the society, a short business session was held. The war, its possibilities upon the members of our society was discussed; the purpose and result of the special meeting of the state sociey, held at Battle Creek, was explained by the secretary; the order issued by the State Society for the special assessment, with its patriotic and eloquent appeal, was read, when all members present, with no remonstration or dissent, responded with their five dollars.

W. H. BALDWIN, Secretary.

MUSKEGON-OCEANA COUNTY

On June 22, 1917, Dr. R. J. Tivnen of Chicago addressed the Muskegon-Oceana Medical Society on the subject of "The Relation of the Upper Respiratory Tract to General Systemic Infections."

The problem of contract practice has occupied the attention of the Society for the last month and a

committee has drawn the following resolutions which are to be voted upon at the next meeting.

Drs. W. P. Gamber and J. T. Cooper of Muskegon are seriously ill and unable to attend to their practices.

On July 20th the Society will meet with Dr. J. D. Buskirk at Shelby and Dr. Buskirk will read a paper on the subject of Diagnosis and Treatment of Diseases of the Heart.

Dr. C. M. Colignon of Muskegon has been at Grayling the last few weeks assuming the commission of Lieutenant in the Medical Reserve Corp.

Dr. B. R. Eastman has closed his office in Muskegon and left with Mrs. Eastman for Ontario to await his orders for service in the Reserve Corps.

Dr. V. S. Laurin of Muskegon is at present serving in a hospital near London, England, having left the latter part of April of this year and planning to stay six months.

A special committee of Doctors Hotvedt, Marshall, LeFevre, Oosting and Hartman, appointed to consider contract practice, on May 28, 1917, adopted the following resolutions, which are to be voted on later:

1. WHEREAS, contract practice is in no way of any real benefit to either employer or employee.

2. WHEREAS, it is under most conditions degrading to the profession, and detrimental to all fair and legitimate competition.

3. WHEREAS, the Compensation laws of this state provide that every employe has the right to choose his own physician, therefore be it resolved;

1. That the Muskegon-Oceana Counties Medical Societies hereby declares its adherence to the principles laid down in the Code and Ethics of the American Medical Society;

2. That no application for membership in this Society shall be considered as long as applicant is in any way connected with contract practice;

3. That any member of this Society doing contract practice, shall after due warning, be expelled from the Society;

4. That it shall be considered unethical for any member of this Society to professionally assist a physician doing contract practice within or out of hospital.

Definition.—By contract practice, in a medical sense, is understood an agreement by a physician with a second party, to render an indefinite amount of professional service during a definite length of time, for a stated sum of money.

Signed by the committee.

C. J. BLOOM, Secretary.

ST. CLAIR COUNTY

A regular meeting of the St. Clair County Medical Association was held at Emmet Wednesday p. m., July 12. After lunch at the Emmett House the members assembled in Cadillac hall where a very interesting and instructive lecture on Tuberculosis Treatment was delivered by Dr. J. L. Chester, President of the Association.

A general discussion followed in which members participated.

Doctors present were: C. F. Kuhn and H. F. Baker of Detroit; Kay of Lapeer; Wright of Yale; McCausland of Imlay City; Ross and Buck of Capac; Hall and Mills of Memphis; Smith and Carney of St. Clair; Attridge, Heavenrich and McColl of Port Huron; Woolsey of Toledo; Campbell of Avoca and Burley of Almont.

J. L. CHESTER, Secretary.

WAYNE COUNTY

The Committee in response to a call from Dr. Peterson met June 12, 1917, in Dr. Biddle's office, Detroit. There were present at this meeting the following members:

Doctors Peterson, Biddle, Warnshuis, Ballin, Olin, Case, Hafford, Haughey, Jennings, Manwaring, McClure, McLean, Eugene Smith and Richard R. Smith.

Dr. Reuben Peterson was elected Chairman and Dr. J. G. R. Manwaring was elected Secretary and Treasurer.

A motion was passed instructing the Secretary to write Governor Sleeper, requesting him to name a medical member of the Governor's State Defense Committee as a representative of that committee on the Michigan State Defense Committee, Medical Section.

The Secretary was also instructed to notify Major Earnest C. Lee (the ranking officer of the National Guard of Michigan) that he is requested to become a member of this committee.

The Secretary was instructed to notify Drs. B. R. Shurley and W. B. Hinsdale that they are requested to be members of this committee, as Deans of Medical Schools in this state.

The Chairman was instructed to request the War Department not to consider any applications for the Officers' Reserve Corps, Medical Section, which have not been approved by the local county committees.

GRATIOT-ISABELLA-CLARE COUNTY

The June meeting was held as follows with thirteen members and one visitor present.

Reading minutes of previous meeting.

Report of Committees.

Report of Board on Application for Membership.

Communications.

Paper, "Rural Surgery," by J. A. Reeder, M.D.

Neither member of the Committee on Illegal Practitioners was present to report. The report of the Board of Censors on the application of Dr. W. R. Williamson for membership was "not approved." By motion the report was accepted. Dr. Williamson has "Homeopathic Physician" on his sign. The letter from the State Secretary containing the recommendation of the Battle Creek meeting was read. By motion of Dr. Brainerd, seconded by C. B. Gardner, the letter was placed on file, but action was deferred until a later meeting. Dr. J. W. Reeder then read his paper on Rural Surgery. This was discussed by Drs. Brainerd, Barstow, Gardner and Dean.

Next meeting basket picnic in Mt. Pleasant.

E. M. HIGHFIELD, Secretary.

Miscellany

SMALL DOSES OF PITUITARY LIQUID.

Armour and Company announce the appearance of Pituitary Liquid in ½ cc. ampoules. This enables the physician that prefers small doses of the posterior pituitary active principle to get one product that is entirely free from preservatives of all kinds.

Pituitary Liquid is physiologically standardized, acts promptly when needed as an oxytocic diuretic or stimulant.

Pituitary Liquid is strong, uniform and being without preservatives of the chlorbutanol group, may be depended on to produce desirable results.

Pituitary Liquid is in boxes of 6 ampoules, 65c for the ½ cc. and $1.00 for the 1 cc.

The Calcium Content of the Blood.—It has been found that the calcium content of the blood plasma of cattle is remarkably constant, even when there is a continuous withdrawal as a result of pregnancy or lactation. It has also been found that there is no marked deviation from the normal in the calcium content of the blood serum of patients in the various stages of pulmonary tuberculosis. Even when a high milk diet was furnished over long periods, the calcium content of the blood was not increased above normal. Further, it was shown that the calcium content of the blood serum of normal human adults did not differ from that in sufferers from tuberculosis. Finally, it has been found that the calcium content of blood plasma differs little from the normal in advanced cases of uremia or in hemophilia or in purpura hemorrhagica (*Jour. A.M.A.*, June 23, 1917, p. 1915).

Russell Emulsion and Russell Prepared Green Bone.—The Council on Pharmacy and Chemistry reports that "The Russell Emulsion" and "The Russell Prepared Green Bone," put out by the Standard Emulsion Company, are inadmissible to New and Nonofficial Remedies. The Russell Emulsion is said to be composed of beef-fat, cocoanut, peanut and cottonseed oils, held in suspension by albumin. The mixture is called a "physiological" emulsion and is exploited on the theory that lime starvation is a main factor in tuberculosis and that amounts of fat are required for the lime starved. There is no proof that tuberculosis is due to an insufficiency of lime in the tissues, and the claims made for the emulsion are grossly unwarranted. Particular attention is called to the exploitation of the emulsion by one Dr. Hague who talks before medical societies. The Russell Prepared Green Bone is said to be made by digesting chicken bones with hydrochloric acid and pepsin and adding glycerin at the end of the digestion. This is advertised as a lime food. The greater value of a few glasses of milk daily is not mentioned (*Jour. A.M.A.*, June 23, 1917, p. 1931).

More Misbranded Nostrums.—The following "patent medicines" have been found misbranded under the U. S. Food and Drugs Act. chiefly because the curative claims made for them were unwarranted and untrue: Sterline's Asthma and Hay Fever Remedy is a water-alcohol solution containing potassium and sodium iodids, bromids and acetates, as well as some laxative substance. Sterline's Bronchial Elixir, a solution of morphine, potassium citrate and aromatics in alcohol and water. Lung-Vita, consisted essentially of a petroleum oil, saponifiable oil and a solution containing sugar and glycerin, with a small quantity of benzoic acid. Arch Brand Nerve Tonic, a compound hypophosphite syrup. Arch Brand Blood Remedy, containing 18 per cent. alcohol, sugar, potassium iodid, sarsaparilla and emodin-bearing drugs (*Jour. A.M.A.*, June 23, 1917, p. 1932).

ON GOING TO PRESS WE LEARN THAT THE HARPER UNIT HAS ARRIVED SAFELY IN FRANCE.